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LIVER DECOMPRESSION BY COMMON BILE DUCT DRAINAGE IN SUBACUTE AND CHRONIC JAUNDICE

REPORT OF SIXTY CASES WITH HEPATITIS OR CONCOMITANT BILIARY DUCT INFECTION AS CAUSE

Alfred A. Strauss, M.D., Siegfried F. Strauss, M.D., Arthur H. Schwartz, M.D.
William J. Tannenbaum, M.D., David D. Kram, M.D.
and
Walter W. Masur, M.D., Chicago

The possibility of using surgical decompression of the ductal system of the liver for relief of chronic jaundice resulting from subacute and acute hepatitis, usually due to a virus infection, first suggested itself to us many years ago when we were doing surgery in cases of congenital atresia of the bile ducts.[1] We found that atresia, or absence, of the excretory bile ducts in these newborn infants produced not only jaundice but also a marked increase of the connective tissue in the liver, causing cirrhosis. This we ascribed to the irritation secondary to biliary stasis. Even in extremely pronounced cases of jaundice where exploration revealed a large liver, deeply pigmented, with an increased amount of connective tissue, we were able to establish good biliary drainage within a few days if the intrahepatic ductal system was patent. A biliary fistula was formed by placing a catheter into the hilus of the liver proximal to the atresia. After jaundice had disappeared, secondary operations could then be done at a later date. For one or two days the fistula would yield a thin water-clear fluid that probably represented the mucous secretion of the ducts. Due to the increased intraductal pressure, the liver cells cannot function until the pressure is relieved by intraductal drainage. After 24 to 48 hours of decompression, the bile assumes its normal color and the jaundice subsides. Within a few months a definitive operation of the Roux Y type can be performed.

TYPES OF CASES BENEFITED BY SURGERY

We feel that insufficient consideration has been given to the surgical approach in the treatment of jaundice resulting from acute and subacute hepatitis on an infectious basis—by that we mean drainage of the common bile duct and decompression of the liver. The pathological process in many instances is not only confined to the liver but there is also inflammation and infiltration of the entire ductal system. This inflammation may vary in intensity; sometimes it may become so severe that a partial obliteration of the smaller ducts and also of the common bile duct is caused. It has been shown that the disease frequently originates not in the liver but in the bile ducts. We have seen, in patients with jaundice of long duration, infiltration of the distal portion of the common bile duct and of the papilla, causing dilatation of the ducts to three or four times their normal size. When these ducts are opened, bile mixed with pus escapes in large quantities. Depending on the chronicity of the process, more or less bile pigment will be present.

Clinically we have encountered three groups of patients with chronic jaundice or biliary stasis: first, those with severe colic-like attacks of pain; second, those without acute attacks and with mild jaundice; and third, those with a deep, silent jaundice. The jaundice in several patients of the second group was so minimal, the only presenting symptom being itching of the skin, that the condition therefore escaped diagnosis for some time. In all these three groups, the pathological condition consists of an inflammatory process in the distal portion of the common bile duct and in the papilla of Vater, producing infiltration, thickening, and finally narrowing of these structures. The intensity of this process may vary; at times it may involve the entire ductal system up to the finest biliary radicals.

In cases of acute and subacute hepatitis, usually due to a virus infection, the liver is usually larger than normal and edematous. Its color ranges from yellow to dark green in the more severe cases. In hepatitis of longer duration but of milder degree, the liver shows a marked increase in the interlobular connective tissue, which produces a picture ranging from a mild cirrhosis to that of

From the surgical services of Michael Reese Hospital, Louis A. Weiss Memorial Hospital, Franklin Boulevard Community Hospital, and Mount Sinai Hospital.

The illustrations have been copied with permission of Cole and co-workers.[1]

1. Strauss, A. A.: Congenital Atresia of the Bile Ducts, J. Mt. Sinai Hosp. **17**: 552-562 (March-April) 1951.

a hobnailed liver. Histologically, in addition to the increase in connective tissue, there is marked vacuolation and destruction of liver parenchyma, which in some cases resembles a liver with subacute yellow atrophy. The pancreas varies greatly in its consistency. It can be fairly firm and lobulated, or hard and diffusely swollen. There is usually a marked degree of peripancreatitis causing firm adhesions between the omentum of the lesser curvature of the stomach and the pancreatic capsule. The lesser omental cavity is often completely obliterated.

One of our patients had a severe infiltrating duodenal ulcer near the papilla of Vater that produced intermittent jaundice for a period of 10 years. The clinical picture eventually indicated severe liver damage, with the patient stuporous and in a semicomatose condition. After several duodenal hemorrhages, the patient finally underwent surgery. The operative findings were a liver about one-third its normal size, with a hobnailed cirrhosis, in addition to a large carbuncle-like infiltrating duodenal ulcer at the papilla of Vater. We performed a high subtotal gastrectomy. For the relief of the deep jaundice that was caused by the infiltration of the papilla of Vater and of the common bile duct, we anastomosed the gallbladder to the open end of the duodenum. The patient has remained well for 20 years. This case brings out two important points: 1. The liver cirrhosis was caused by an infiltrating duodenal ulcer of long standing that produced recurrent infections and obstruction of the common bile duct resulting in intermittent jaundice. 2. After decompression of the biliary system, the liver apparently completely recovered physiologically, since the patient is in perfect health 20 years after surgery.

Another patient with a history of jaundice of five months' duration, also critically ill at the time of surgery, underwent drainage of the common bile duct. Biopsy of the liver showed marked degeneration of the liver parenchyma and interlobular cirrhosis. Eight weeks later, at autopsy, the liver showed areas of marked regeneration with formation of new bile ducts. This shows that even in severe cases intraductal tension can be relieved by drainage of the common bile duct and that regeneration does occur in the liver when the intraductal and intrahepatic pressure is relieved.

We believe that, in some of the patients with jaundice due to acute or subacute hepatitis who do not improve under medical management, surgery should be considered. We refer to the patients in whom, in addition to the hepatitis, inflammation of the intrahepatic as well as of the extrahepatic bile ducts is present. It is our contention that the inflammatory process produces an obstruction of the bile flow at the papilla of Vater. This in turn causes an increase of the intraductal pressure that is transmitted toward the liver parenchyma leading to further breakdown of liver cells, necrosis, and increased jaundice. If this vicious cycle is interrupted by drainage of the common bile duct, excretion of bile will take place followed by improvement of liver function, leading eventually to complete alleviation of the jaundice. Frequently in such instances, not only the wall of the common bile duct is infiltrated and thickened but also the surrounding areolar tissue. The extreme hyperemia represented by many small blood vessels makes the identification and dissection of the common bile duct quite difficult. There is usually a large amount of bleeding from this hemorrhagic area during the dissection. In occasional cases, when the involved structures have been small, we have used special magnification eyeglasses. In many instances we were able to insert only the smallest catheter, usually employed on premature infants. A regular French catheter, with its tip cut off to insure better drainage, is sutured into the common bile duct, pointing toward the liver. Since such a catheter has to remain in place for a considerable length of time, sometimes for a period of six months, we use silk for suture material. Ordinarily, for one or two days, only a small amount of a colorless, watery liquid returns from the catheter, but, after this, a steady flow of bile begins, ranging at first from 60 to 90 cc., until, in the second postoperative week, 300 to 500 cc. of good normal bile is recovered in a 24 hour period. This is due to the relief of the intraductal pressure against the liver cells. Concomitantly, the clinical condition of the patient improves and the jaundice decreases. Liver function tests usually return to normal within several months. A typical case history of a patient with subacute hepatitis with severe jaundice illustrates this.

REPORT OF A CASE

A 26-year-old man was first admitted to the hospital with clinical and laboratory findings of fairly severe acute hepatitis with jaundice. Under a conservative regimen he improved sufficiently to be discharged at the end of five weeks; however, after three weeks at home, his jaundice increased again, and he was returned to the hospital approximately eight weeks from the known onset of his disease. His liver at that time could be palpated three fingerbreadths below the costal margin, and liver function tests showed a relapse of the hepatitis. On the day of readmission, the serum bilirubin reached a level of 40 mg. per 100 cc. The cholesterol ester fraction had decreased steadily, and four days after admission it was zero. Whereas urobilinogen had been present in considerable amounts in the urine and in the feces during the period of remission, it had now disappeared completely. The abdominal findings were much more pronounced during the second hospital stay; the liver was larger and more tender, and the spleen could now be easily palpated. The patient's clinical condition continued to deteriorate, with the patient mentally depressed and drowsy. Therefore, after the patient had been in a continuously jaundiced condition for almost three months, we decided, in consultation with the internist, to do an exploratory laparotomy with common bile duct drainage.

The operative findings were severe infiltration of the entire hepatoduodenal area involving the bile ducts as well as the periductal areolar tissue. The liver was markedly enlarged and firm. The gallbladder was small and empty. Exposure of the common bile duct met with great difficulty. There was a considerable amount of bleeding from the small blood vessels within the periductal tissue. The lumen of the common bile duct was very small and empty. Thus, it was necessary to use the smallest catheter available, which was the catheter used on premature infants. This was passed into the proximal portion of the duct and sutured with silk. Within 24 hours, the usual watery, lightly colored bile appeared, being 150 cc. in volume. Twenty-four hours later the bile was almost normal in color and character. On the fifth postoperative day there was 360 cc. of normal looking bile, and this increased steadily until, finally, up to 780 cc. was excreted in a 24 hour period. This again proves that, when the intraductal pressure against the liver cells is relieved they will start functioning. This relief is accomplished by drainage of the common bile duct. At the same time that the jaundice gradually decreased, liver function tests returned to normal, and the patient left the hospital in excellent condition three months after the operation. Now, two years later, the patient is well, and there has been no recurrence of the disease.

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It seems to us that the impaired outflow of bile from the infiltrated ductal system causes intraductal pressure and enough back pressure in the liver against the liver cells to interfere with the normal function of the liver cells and that drainage of the common bile duct will relieve this tension, thus contributing to the establishment of a normal bile flow. Irrigation of the catheter is ordinarily unnecessary, except when a mucous plug or sediment obstructs the passage of bile once drainage has started.

EVALUATION OF CASES

From a series of 26 operative cases of this type, 4 patients were not relieved of their jaundice and died several months later; the remaining 22 made a complete recovery. They are well, and their liver function tests are normal. We will concede that some of these patients might have recovered without our resorting to surgical drainage of the common bile duct; however, we feel that the recovery rate in this series could not have been attained by medical therapy alone. All these patients had had an adequate trial period of medical treatment and were in poor condition at the time of surgical consultation; some of them were semistuporous, with liver function tests indicating extreme liver damage.

Another type of subacute or chronic hepatitis has its basis primarily in an infection of the common bile duct and the papilla of Vater. In time such a duct will become thickened and infiltrated. At laparotomy there is usually tremendous enlargement and dilatation of the common bile duct. Exploration of the duct reveals a large amount of serous to seropurulent exudate. On probing the duct one encounters difficulty in passing through the papilla of Vater, indicating an obstructive process at that site. Patients with this type of disease as a rule recover much more quickly from their jaundice and hepatitis than those who primarily have hepatitis. In some of these cases of long-standing (three to six months) the patients pass postoperatively into a phase of acute hepatitis that clinically resembles acute yellow atrophy of the liver. This happened in one case in our series of 34 patients where the autopsy findings were that of an acute necrosis of the liver with acute yellow atrophy. The other 33 patients recovered uneventfully. In 1933 [2] we reported a series of 58 cases of subacute or chronic jaundice due to cholangitis and infiltration of the papilla of Vater causing biliary stasis. At that time we recommended drainage of the common bile duct. If jaundice recurred after this procedure, we advised choledochoduodenostomy with gastroenterostomy. In recent years we have treated such cases of recurrent jaundice after common duct drainage with a Roux Y operation.

SURGICAL TECHNIQUE

Recurrent jaundice following common bile duct drainage means contraction and infiltration of the distal portion of the common bile duct and of the papilla of Vater due to connective tissue formation. The best operative procedure to relieve this type of jaundice is the one-arm Roux Y operation as described by Cole, Ireneus Jr., and Reynolds.[3] In some of our earlier cases, where we used rubber catheters of various sizes for an anastomosis between the liver or the hepatic ducts and the jejunum, we were able to establish permanent bile drainage. These patients are still living and well. In later years we began using the vitallium tube described by Pearse [4] for choledochojejunostomy and in surgical procedures for congenital atresia of the bile ducts. We found the vitallium tubes more satisfactory, but even some of these were expelled into the intestinal tract. As a consequence of this experience, we designed a vitallium tube with sharp prong-like projections at the upper end (fig. 1, 2, and 3), and we are using this tube at the present time. When the tube is placed into the hilus of the liver, the prongs pierce the surrounding tissues so that it is almost impossible to dislodge the tube from its position. This has been successfully employed in several patients.

The opening in the common bile duct or at the end of the common bile duct as it enters the liver is dilated. The vitallium tube is inserted into this opening, and silk purse-string sutures are used to fasten the tube (fig. 1). A loop of jejunum about 14 to 16 in. from the ligament of Treitz is divided. An end-to-side anastomosis with waxed silk sutures is made between the proximal end of the divided jejunum and lower portion of the jejunum,

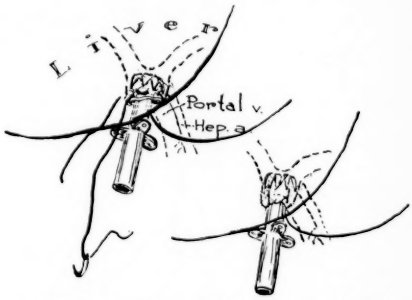

Fig. 1.—Vitallium tube lying within the hilus of the liver or within the common bile duct. The metal arms lie between the hilus of the liver and the closed purse-stringed jejunum.

approximately 2 ft. away from the area of transection. An opening is made in the transverse mesocolon, and the arm of the jejunum to be anastomosed to the stump of the duct, or to the hilus of the liver, is placed through this opening so as to make it retrocolic. A small opening should be made about 1 to 2 in. from the end of the closed jejunum (fig. 2*B*) and a fine forceps inserted to control the position of the vitallium tube. Interrupted sutures can then be placed in the jejunum, which is to be attached to the hilus of the liver (fig. 3*B*). Care must be taken to close this area carefully so as not to create tissue tension. The opening made in the jejunum by the forceps can then be closed. This procedure affords a double protection against the tube being dislodged: first, by the prongs fastened in the liver substance, and second,

2. Strauss, A. A.; Strauss, S. F.; Crawford, R. A., and Strauss, H. A.: Chronic Biliary Stasis: Treatment by Choledochoduodenostomy and Gastroenterostomy, J. A. M. A. **101**: 1365-1371 (Oct. 28) 1933.

3. Cole, W. H.; Ireneus, C., Jr., and Reynolds, J. T.: The Use of Vitallium Tubes in Strictures and Absence of the Common Bile Duct, Ann. Surg. **122**: 490-521 (Oct.) 1945.

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by the metal arms of the tube lying between the liver and the closed purse-stringed jejunum. In some instances we included the arms of the vitallium tube in the closed jejunum, but we found that this was not as satisfactory. The opening in the mesocolon is sutured around the jejunum and its mesentery in order to prevent a herniation of loops of small intestine with possible obstruction (fig. 3*B*). The open end of the divided jejunum is purse-stringed with waxed silk (fig. 3*A*). This purse-stringed suture is tightened around the end of the vitallium tube, emerging from the hilus of the liver (fig. 3*A*). At that point, the metal arms of the tube are between the liver and jejunum; the jejunum is then attached to the hilus of the liver with interrupted silk sutures (fig. 3*B*).

We have used the procedure suggested by Cole of making valves in the arm of the jejunum to prevent a reflux of the intestinal contents into the hilus of the liver. Usually four such valves (fig. 4) are made. Interrupted sutures are used to fold the jejunal wall into its lumen,

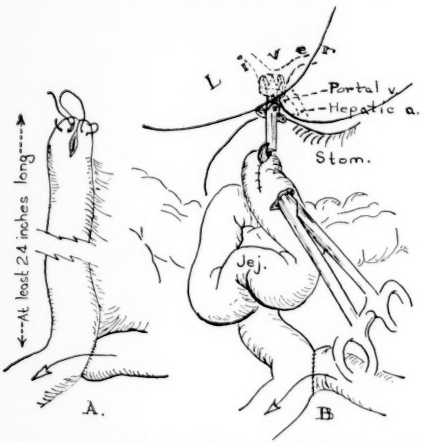

Fig. 2.—Closed blind end of the jejunum, *A*, with purse-string suture at least 24 in. from end-to-side anastomosis of jejunum and, *B*, vitallium tube in place. A forceps is introduced into jejunum to draw vitallium tube into lumen of intestine.

thus forming a valve. Two small rubber drains are placed along the hilus of the liver and brought out through a small stab-type incision, as a protection against possible bile leakage. These drains are ordinarily not removed until the 8th or 10th day.

COMMENT

In many cases of chronic jaundice caused by an infectious process involving the duodenum, pancreas, and common bile duct, we feel that the infection might possibly start in the duodenum and then ascend into the common bile duct. The infectious process causes typical pathological changes in the lower portion of the common bile duct and in the papilla of Vater; namely, edema and infiltration that eventually lead to interference with the biliary outflow. The bile stasis created by this obstruction is transmitted into the liver and produces degeneration and vacuolation of the liver parenchyma, and, later, interlobular and periductal cirrhosis. Congenital obstruction in the common bile duct of the newborn infant illustrates such a sequence of changes. It is probable that in many patients whose cases were diagnosed as primary

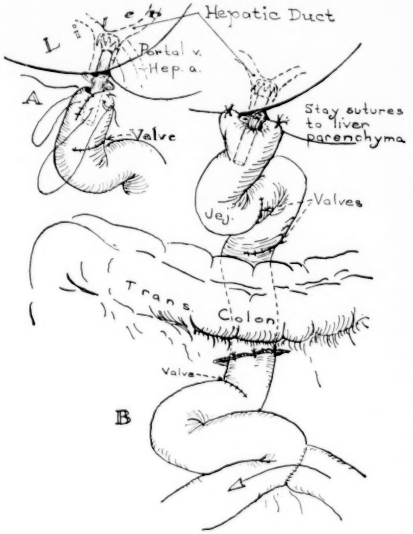

Fig. 3.—Blind end of jejunum has been passed through the mesocolon up to liver. *A* shows purse-string suture of jejunum around vitallium tube and below its arms. *B*, stay sutures attach blind end of jejunum to capsule of liver.

cirrhosis of the liver, not due to alcoholism or other chemical processes, the condition began as an infectious process in the biliary passages rather than in the liver itself. The reported history of the patient with a duodenal

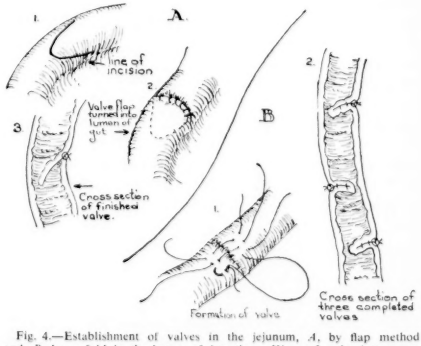

Fig. 4.—Establishment of valves in the jejunum, *A*, by flap method and, *B*, by a fold in the lumen of intestine. We prefer the latter procedure.

ulcer at the papilla of Vater that caused cholangitis, intermittent jaundice, and, finally, a hobnailed cirrhosis of the liver illustrates this point.

SUMMARY AND CONCLUSIONS

Surgical decompression of the liver and its ductal system by common bile duct drainage for a period of time until the patient is completely relieved seems to be fundamental in cases of jaundice of long standing that result from acute and subacute hepatitis, usually due to a virus infection, and in those cases in which the jaundice is due to primary ductal infection usually starting in the papilla and common bile duct and then extending up into the branches of the bile ducts into the liver cells, thereby producing a vicious circle of bile retention due to increased intraductal pressure. Common bile duct drainage relieves intraductal and intrahepatic pressure in (1) congenital atresia, (2) acute and subacute hepatitis, and (3) in cases resulting from infections of the papilla and bile ducts, probably due to an original duodenitis. In the first 24 hours only clear, watery bile is secreted from the ductal epithelium, showing that the liver cells cannot function under pressure. When this pressure is relieved, bile is secreted by the liver cells, as is shown by good bile drainage from the common bile duct catheter. Common bile duct drainage was done in a series of 26 cases of acute and subacute hepatitis with jaundice and in another series of 34 cases of cholangitic hepatitis with jaundice. The mortality rate in the first series was four and in the second series one.

If common bile duct drainage does not relieve the jaundice completely and permanently in the types of cases we have described or in those cases where the jaundice recurs after an interval of freedom, a one-arm Roux Y operation is advocated. This has proved extremely successful.

104 S. Michigan Ave. (3) (A. Strauss).

TISSUE CULTURE ISOLATION OF COXSACKIE GROUP B VIRUSES IN ASEPTIC MENINGITIS

William M. M. Kirby, M.D.
and
Charles A. Evans, M.D., Ph.D., Seattle

It has become well established during recent years that Coxsackie group A viruses are the cause of herpangina and that group B strains are the etiological agents in epidemic pleurodynia (Bornholm disease).[1] The relationship of Coxsackie viruses to infections of the central nervous system is, however, much less certain. In many instances Coxsackie viruses have been isolated from the stools of patients shown to have poliomyelitis. Further, Coxsackie viruses are so widespread in nature that, despite isolation of these viruses from stool specimens and a rising titer of antibodies, it has been difficult to rule out the possibility that these agents were merely causing subclinical infections in patients with other diseases. On the other hand, persuasive evidence in favor of the etiological role of Coxsackie viruses in aseptic meningitis has been accumulated.[2] Particularly important is the fact that Coxsackie viruses have been isolated from the spinal fluid by at least three groups.[3] Coxsackie viruses have usually been isolated by injecting clinical specimens into suckling mice or hamsters. Until recently, these agents have not been recovered from clinical specimens by tissue culture. The present report describes a group of adults with a clinical diagnosis of poliomyelitis in whom a relatively large percentage of the infections were apparently caused by Coxsackie group B viruses. In all instances primary isolation and serologic identification of the virus was made in tissue culture.

PLAN OF STUDY

The study included 66 patients admitted to the adult infectious disease ward of King County Hospital from July through December, 1954, with a diagnosis of paralytic or nonparalytic poliomyelitis. The patients ranged in age from 13 to 38 years. All had fever, headache, stiff neck, and pleocytosis on admission. Stool specimens were collected as soon as possible after admission and were frozen until laboratory studies were performed. Serums were obtained for neutralization tests on admission and from three to six weeks later.

Methods of handling stool specimens and preparing tissue culture tubes have been described in detail elsewhere.[4] Briefly, fecal specimens were suspended in distilled water and freed of bacteria by centrifugation and the addition of antibiotics. The supernatant fluid was used for the inoculation of trypsinized monolayer cul-

From the departments of medicine and microbiology, University of Washington School of Medicine, and the King County Hospital.

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Dr. Velma C. Chambers supervised and evaluated the poliomyelitis neutralization tests, and Hilda Jean May and Sally Allard gave technical assistance.

Dr. R. T. Ravenholt, epidemiologist, Seattle-King County Health Department, assisted with collection of the convalescent blood specimens.

Coxsackie antiserums were supplied by Dr. Gilbert Dalldorf, Director, Laboratories and Research, New York State Department of Health, Albany, N. Y.

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tures of kidney epithelium obtained from rhesus monkeys. The cultures were observed daily for cytopathogenicity, and at least three serial passages were made before a specimen was considered negative. When cytopathogenic effects were observed, neutralization tests were carried out with the three types of poliomyelitis antiserums. Agents not neutralized by poliomyelitis antiserums were further tested against Coxsackie group B antiserums, types 1-4.[5]

In all patients, neutralization tests for poliomyelitis antibodies were performed on acute and convalescent serums, using the colorimetric assay method of Salk, Youngner, and Ward.[6] In addition, in patients from whom Coxsackie group B virus, type 2, was obtained, neutralization tests were performed against a B-2 strain, using virus obtained from one of the patients. These tests were performed with monolayer tissue cultures, using serial dilutions of patients' serums. In the patient whose stool specimens yielded Coxsackie B-4 virus, neutralization tests of acute and convalescent serums were also performed with B-4 virus.

TABLE 1.—*Virus Isolations from Fecal Specimens of Sixty-Six Patients with Clinical Diagnosis of Poliomyelitis*

Type of Patient	No.	Virus Not Isolated	Virus Isolated	Poliomyelitis			Not Typable
				Type 1	Type 2	Type 3	
All cases	66	15	51 (77%)	9	5	23	14
Paralytic	36	5	31 (86%)	8	4	18	1*
Nonparalytic	30	10	20 (67%)	1	1	5	13

* Poliomyelitis type 2 virus also recovered from later specimens.

RESULTS

Of the 66 patients, virus was obtained from the stools of 51 (table 1). Since in most years type 1 strains have been predominant, it was of interest that 23 (62%) of the 37 poliomyelitis strains isolated were members of type 3. It was further observed that the stools of 14 patients yielded cytopathogenic agents that were not neutralized by any of the three types of poliomyelitis antiserums. These agents were tentatively classified as "orphan" viruses. They caused rather slow, patchy degeneration of the monkey kidney cells over a period of 7 to 10 days. In contrast, the poliomyelitis viruses caused complete cytolysis within 48 to 72 hours. These differences in growth characteristics were so striking that as the study progressed it became possible during primary isolation to recognize the agents that were not poliomyelitis viruses. The possibility that more than one poliomyelitis virus was present in these specimens was excluded by the failure of a mixture of all three types of antiserums to prevent the slow, patchy degeneration. Indeed, in one paralytic case two types of poliomyelitis virus were present in a stool specimen; this was immediately suspected when rapid cytolysis occurred in the presence of each of the three poliomyelitis antiserums. Repetition of the neutralization test using appropriate combinations of antiserums established the fact that this specimen contained both type 2 and type 3 poliomyelitis viruses.

Using tissue culture techniques, essentially identical with those employed for poliomyelitis viruses, the 14 unknown strains were further identified as Coxsackie group B viruses. Of the 13 patients whose stools contained Coxsackie B-2 viruses, one was of special interest in that the first two specimens contained this virus, whereas the next three yielded poliomyelitis virus, type 2. Stools from the other patient yielded a Coxsackie B-4 strain. For these 14 patients, results of neutralization tests on acute and convalescent serums are presented in table 2. In the 13 patients whose stools yielded Coxsackie B-2 virus, a significant antibody titer against the homologous virus was present in all instances, and in most cases there was a definite rise in titer. The patient in case 14, from whom B-4 virus was isolated, showed a rise in antibody titer to this virus, but her serums contained no antibodies against the B-2 strain. Neutralization tests for poliomyelitis antibodies are also presented in table 2. In cases 1 through 5, antibodies were absent or present in low titer, indicating that these patients did not have a recent attack of poliomyelitis. This was in striking contrast to the results obtained in the 36 patients with paralytic poliomyelitis, all of whom showed a significant antibody titer with one type or another. In the other nine patients in cases 6 through 14 antibodies were present for poliomyelitis viruses. In some instances a rise in titer occurred, while in others a high titer was present in both acute and convalescent specimens. The possibility that some of these patients had recent infections with poliomyelitis virus cannot be excluded; the data are probably best regarded as inconclusive on this point. The patient in case 13, whose first two stools yielded Coxsackie B-2 virus and whose later specimens contained poliomyelitis type 2 virus, had a high antibody titer against both of these agents.

Twelve of the 14 patients were between the ages of 20 and 30, one was 34, and one 37. Ten were females, four of whom were pregnant (cases 1, 4, 5, 6; table 2); in three of these four patients antibodies against poliomyelitis viruses were absent or present only in low titer. One patient was admitted during July, three during August, six during September, and four in October. All 14 patients had fever, malaise, headache, and stiffness of the neck and back. The cerebrospinal fluid leukocyte count was above normal in all cases, but in 8 of the 14 it was under 100 cells per cubic millimeter. The clinical course in these 14 patients was similar to that observed in nonparalytic patients from whom poliomyelitis viruses were recovered. The temperature was normal within 4 or 5 days in most instances, and the patients were essentially asymptomatic within 7 to 10 days. All were completely well and had returned to their usual duties at the end of two months except for the patient in case 13, whose stools also yielded poliomyelitis virus, type 2. Slight weakness of one leg persisted for three months, but at the end of this time the patient had recovered completely and returned to work.

5. Sickles, G. M.; Feorino, P., and Plager, H.: Isolation and Type Determination of Coxsackie Virus, Group B, in Tissue Culture, Proc. Soc. Exper. Biol. & Med. **88**: 22 (Jan.) 1955.

6. Salk, J. E.; Youngner, J. S., and Ward, E. N.: Use of Color Change of Phenol Red as the Indicator in Titrating Poliomyelitis Virus or Its Antibody in a Tissue-Culture System, Am. J. Hyg. **60**: 214 (Sept.) 1954.

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COMMENT

The most striking feature of the present study was the recovery of viruses other than poliomyelitis from 27.4% of patients whose stool specimens yielded cytopathogenic agents. Primary isolation was made with tissue culture (monkey kidney), and neutralization tests revealed that these agents were Coxsackie group B viruses. Prior to the advent of trypsinized monolayer tissue cultures Coxsackie viruses were rarely isolated by the tissue culture technique, and agents not neutralized by poliomyelitis antiserums have been commonly referred to as "orphan" viruses. It is apparent from the present study that, with techniques currently available, appropriate tests to exclude Coxsackie viruses must be performed before designating an unknown agent an "orphan" virus.

In contrast to the rapid, complete cytolysis caused by poliomyelitis viruses, growth of the Coxsackie strains was characterized by slow, patchy degeneration of the monkey kidney cells. These differences in cytopathogenicity were so clear-cut that it was possible to recognize the convalescent serums indicated clearly that the patients were infected with Coxsackie B-2 (13 cases) or B-4 (1 case) virus. Neutralization tests were also carried out with poliomyelitis viruses, and in five cases the results provided definite evidence that there had not been a recent infection with poliomyelitis viruses. In the other nine cases the results were inconclusive in this regard.

The 13 patients whose stools yielded Coxsackie B-2 virus entered the hospital from widely scattered parts of the Seattle area. Isolation of this virus from fecal specimens, which were usually obtained a few days after admission, raises the possibility that the Coxsackie infections were acquired in the hospital in patients with aseptic meningitis due to some other cause. While this possibility cannot be definitely excluded from the data obtained, it seems unlikely in our opinion in view of the relative dates of admission to the hospital, the nature of the illness, and the failure to establish any other etiological diagnosis. Studies of hospital personnel, other patients, and family contacts, which would be necessary to settle the point, were not carried out. Clinically, the picture was that of aseptic meningitis and was indistinguishable from that of the nonparalytic patients whose fecal specimens yielded poliomyelitis viruses.

TABLE 2.—*Results of Serologic Studies on Acute and Convalescent Serums of Fourteen Patients Whose Fecal Specimens Yielded Coxsackie Viruses*

Case No.	Age	Sex	Date Admitted	Spinal Fluid Leukocyte Count	Coxsackie Virus Isolated from Stool	Against Coxsackie Viruses				Against Poliomyelitis Viruses					
						B-2		B-4		Type 1		Type 2		Type 3	
						Acute	Convalescent	Acute	Convalescent	Acute	Convalescent	Acute	Convalescent	Acute	Convalescent
1	25	F	8/21	74	B-2	<10	320	..*	..	<4	<4	<4	<4	16	12
2	27	M	9/25	49	B-2	160	320	..	..	<4	<4	<4	<4	<4	<4
3	29	F	9/28	21	B-2	>640	640	..	..	<4	<4	<4	<4	<4	<4
4	22	F	10/11	110	B-2	10	160	..	..	16	8	<4	<4	<4	<4
5	26	F	10/14	42	B-2	80	640	..	..	<4	<4	<4	<4	<4	<4
6	24	F	7/30	219	B-2	10	80	..	..	64	40	>1024	>1024	6	6
7	37	F	8/11	68	B-2	40	160	..	..	8	<4	64	160	640	640
8	26	M	8/23	220	B-2	10	320	..	..	<4	<4	256	640	12	16
9	34	F	9/2	13	B-2	40	160	..	..	640	256	16	12	<4	<4
10	20	F	9/10	24	B-2	40	640	..	..	12	40	40	16	160	160
11	29	M	9/16	440	B-2	80	160	..	..	160	256	4	256	16	16
12	29	F	10/8	77	B-2	80	640	..	..	8	16	>1024	>1024	64	40
13	25	M	9/22	266	B-2†	>640	640	..	..	4	<4	64	256	<4	<4
14	20	F	10/3	31	B-4	<10	<10	10	320	<4	<4	<4	<4	140	140

* Means not tested. † Poliomyelitis virus, type 2, isolated in later specimens.

agents that were not poliomyelitis before serologic identification was attempted. The suitability of monkey kidney tissue for the primary isolation of most or all Coxsackie group B viruses remains to be determined. Sickles and others [3] found cytopathogenicity to be uniformly good, although the number of strains tested was small. HeLa cells cultures, on the other hand, seem to have definite limitations in this respect in that B-2 and B-4 strains are propagated very poorly. In one laboratory utilizing HeLa cells a number of B-1 and B-3 strains have been recovered, but there have been no isolations of B-2 or B-4 strains.[7] Hummeler, on the other hand, obtained primary isolations of B-2 virus in HeLa cells from 2 of 11 patients in an epidemic in a mental institution.[3b]

Ubiquity of the Coxsackie viruses has made it difficult to prove that these agents actually cause infections of the central nervous system. This etiological relationship has now been fairly well established by recovery of Coxsackie group B viruses from the spinal fluid of a number of patients with aseptic meningitis.[3] No attempts to isolate virus from the spinal fluid were made in the present study, but suggestive evidence was contributed by serologic studies. Neutralization tests with acute and

SUMMARY

Of 66 adults admitted to King County Hospital during the summer and fall of 1954 with a clinical diagnosis of poliomyelitis, cytopathogenic agents were isolated by tissue culture (monkey kidney) from fecal specimens of 51. In 14 (27.4%) of these 51 patients, the agents isolated were not neutralized by poliomyelitis antiserums. Further study revealed that 13 of the 14 unidentified agents were Coxsackie group B viruses, type 2, and that the other was a Coxsackie B-4 strain. Neutralization tests performed on acute and convalescent serums gave clear-cut evidence of infection with the Coxsackie viruses isolated from the stools. In five of the patients, poliomyelitis antibodies were absent or present only in low titer both during and after the infection. In the other nine patients, definite conclusions could not be drawn as to

7. Syverton, J. T.: Personal communication to the authors.

whether the patient had had a recent infection with poliomyelitis viruses. The 14 patients infected with Coxsackie viruses ranged in age from 20 to 37 years. Ten were women, of whom four were pregnant. In addition to fever and stiff neck all had pleocytosis, but in 8 of the 14 the cerebrospinal fluid leukocyte count was below 100 per cubic millimeter. The clinical illness was that of aseptic meningitis and was indistinguishable from that observed in patients with nonparalytic cases from whom poliomyelitis viruses were recovered.

MANAGEMENT OF PURULENT MENINGITIS

James N. Etteldorf, M.D., Memphis, Tenn.

With the advent of chemotherapeutic and antibiotic agents, there has been a great decrease in mortality and morbidity resulting from infections involving the meninges. With early diagnosis and treatment, it has become possible to cure almost all patients with the more commonly occurring types of purulent meningitis; nevertheless, there continues to be a significant number of deaths attributed to this condition. Furthermore, in those who survive the ravages of this disease, a good number are left with all types of complications, many of which are serious and handicapping. Dr. Hattie Alexander [1] has attributed the failures in management of meningitis to the following causes: (1) failure to establish an early clinical diagnosis; (2) inadequate laboratory facilities for accurate and rapid identification of the etiological agent; and (3) lack of necessary discrimination in the selection and use of therapeutic agents.

The current practice of many physicians of administering chemotherapeutic and antibiotic agents singly, or in combination, early during the course of infections in which fever is a symptom has probably reduced the incidence of meningitis. However, such practice has caused an increase in those who survive with central nervous system damage. This has been attributed to inadequate therapy due to failure to select the optimal agent or failure to administer adequate dosages of the antibacterial agents for a sufficient period of time. This failure to select the proper agent, or to administer adequate dosages, may result in an undesirable outcome because the infection has not been completely obliterated and/or because a resistant strain of the infecting organism may have emerged, the more sensitive strains having been destroyed. The following discussion will outline the important diagnostic features and give a course of treatment for pediatric patients that is followed at our hospital. This treatment, which includes the management of certain complications, represents the modern trend and in our experience, as elsewhere, has given good results.

DIAGNOSIS

It is only by having a high index of suspicion of the presence of meningitis that the early diagnosis is made; therefore, great familiarity with the significant historical features, as well as the signs and symptoms, of this disease is imperative in order that the diagnosis may be established. Familiarity with these features will prompt the physician to perform a diagnostic spinal puncture when indicated. It should be emphasized that, during the neonatal period and in severely ill and debilitated infants, many of the clinical manifestations of meningitis may be lacking. Therefore, if the cause of the fever cannot be determined and if the general condition of the patient is out of proportion to the physical findings, one should look to the central nervous system for the source of trouble and perform a spinal puncture.

Signs and Symptoms.—The following signs and symptoms are among the most important: fever, anorexia, headache, vomiting, periods of increased irritability, drowsiness, high-pitched (cephalic) cry, fixed gaze, irregularity in rate and amplitude of respiration, convulsions, petechial rash (especially in meningococcic meningitis), bulging fontanel (unless infant is dehydrated), nuchal rigidity, presence of Kernig's sign, presence of Brudzinski's sign, hyperactive reflexes, strabismus, opisthotonos, coma, and paralysis.

Cerebrospinal Fluid.—The single most important diagnostic feature of this disease is the discovery of an abnormal cerebrospinal fluid. The spinal puncture must be carried out with care, and one should check for signs of increased intracranial pressure, such as bradycardia, hypertension, or papilledema, before carrying out the procedure. If signs of increased intracranial pressure are present, only a few drops of fluid should be withdrawn through a 22 gauge needle. Papilledema suggests long-standing increased intracranial pressure and may contraindicate a spinal puncture without a neurosurgical consultation. The danger lies in the possibility of herniation of the brain stem into the foramen magnum when the pressure of the spinal fluid is reduced by withdrawal of fluid.

Once the fluid is obtained, cultures should be made using the following mediums and sensitivity tests requested. 1. Chick embryo, if available, is probably the most efficient medium. 2. Brain broth in our experience has been very reliable, and cultures may be planted by permitting fluid to drop into the tube from the lumbar puncture needle. 3. Blood agar or broth should be used. 4. Dubos' or Lowenstein's medium should be used if tuberculosis is present and Sabouraud's if yeast or fungi are suspected. 5. If penicillin or sulfonamide drugs have been administered, penicillinase and *p*-aminobenzoic acid should be added to the mediums. Total and differ-

Professor of Pediatrics, College of Medicine, University of Tennessee, Consultant and Attending Pediatrician at the John Gaston Hospital and the Le Bonheur Children's Hospital.

Read before the Eighth Clinical Meeting of the American Medical Association, Miami, Fla., Dec. 1, 1954.

1. Alexander, H. E.: Advances in the Treatment of Bacterial Meningitis, in Advances in Pediatrics, vol. 5, Levine, S. Z., and others, editors, Chicago, Year Book Publishers, Inc., 1952; Guides to Optimal Therapy in Bacterial Meningitis, J. A. M. A. 152: 662 (June 20) 1953.

ential cerebrospinal fluid cell count with and without the addition of acetic acid is valuable in the differential diagnosis.

The following procedures will assist in an early identification of the etiological organism: Gram's stain; Ziehl-Neelsen's (acid-fast) stain, if tuberculous meningitis is suspected; and capsular swelling of bacteria (Neufeld's reaction) in sediment when specific antiserum is added (especially useful in identifying Hemophilus influenzae type B). Table 1 lists the more frequent, as well as some of the less common, bacteria that cause meningitis, with their staining properties and morphological characteristics. The protein level is usually elevated above 40 mg. per 100 cc. The test for sugar shows a decrease in proportion to the increase in cerebrospinal fluid cell count except for tuberculosis, which causes moderate pleocytosis.

Other Diagnostic Studies. — Additional diagnostic studies should include blood cultures with sensitivity studies; culture and stain fluid obtained from skin lesions, if petechiae or ecchymoses are present; nasopharyngeal cultures; blood cell counts; tuberculin skin

TABLE 1.—*Bacteria That Cause Meningitis*

	Staining Properties	Morphological Characteristics
Hemophilus influenzae	Gram negative	Pleomorphic rods
Meningococcus	Gram negative	Intracellular and extracellular cocci in pairs or tetrads
Pneumococcus	Gram positive	Cocci in pairs
Streptococcus	Gram positive	Cocci in chains
Micrococcus	Gram positive	Cocci in clusters
Escherichia coli	Gram negative	Rods
Pseudomonas aeruginosa (pyocyaneus)	Gram negative	Rods
Proteus	Gram negative	Rods
Salmonella Typhoid Paratyphoid A & B	Gram negative	Rods
Klebsiella pneumoniae	Gram negative	Rods
Mycobacterium tuberculosis	Acid-fast Gram positive	Rods

test; pellicle formation of cerebrospinal fluid with acid-fast stain (the tubercle bacilli when present are concentrated in the pellicle); and India ink preparation of cerebrospinal fluid sediment for Cryptococcus neoformans, a rare cause of meningitis.

TREATMENT

The treatment of meningitis is divided into the following categories: supportive, antibacterial, and management of complications.

Supportive Treatment.—The patient should have bed rest and hospitalization for adequate nursing care. To control fever, aspirin should be given (1 grain [60 mg.] per year of age every four hours) for temperatures of 101 F or above; not more than 5 grains (0.32 gm.) should be given to patients under 10 years of age. A sponge bath should be given for temperature in excess of 103 F. Sedation is required for convulsions and restlessness (0.5 to 1 grain [30 to 60 mg.] of phenobarbital sodium given intramuscularly or 0.5 to 2 grains [30 to 120 mg.] of amytal sodium given intramuscularly or intravenously). Fluid therapy is usually required during the first 48 hours or longer in the following amounts: 60 cc. of 5 or 10% glucose in water per kilogram per 24 hours as slow intravenous drip; 30 cc. of M/6 sodium lactate solution per kilogram per 24 hours subcutaneously or intravenously to assure an alkaline urine when sulfonamide drugs are being used (if vomiting is absent, 5 cc. of molar sodium lactate solution per kilogram per 24 hours orally with orange juice may be substituted for parenterally administered sodium lactate); Ringer's solution by clysis as indicated in table 2; and blood or plasma (20 cc. per kilogram) in many serious and overwhelming infections in order to supply red blood cells for oxygen transport, for energy, and for passive transfer of antibodies. The use of oxygen is helpful in minimizing cerebral damage due to anoxia.

The quantity of Ringer's solution is based on the normal 24 hour requirements of salt and may be increased if the salt requirements are increased because of vomiting or adrenal failure. The Ringer's solution and 5% glucose solution may be mixed together and given either subcutaneously or intravenously. If continuous parenteral administration of fluid is required beyond two days because of vomiting, potassium chloride should be administered as indicated in table 2 and may be added in four divided doses at six hour intervals to fluid that is being administered parenterally.

Antibacterial Treatment.—The sulfonamide drugs, through their bacteriostatic action, along with penicillin, a bactericidal agent, and the new broad spectrum antibiotics, with their bacteriostatic and bactericidal actions, have made it possible to cure almost all cases of acute purulent meningitis. At least three, and sometimes four, drugs may be given simultaneously. Such combinations afford bactericidal action and reduce the likelihood of emergence of resistant strains, assuring maximal benefit to the patient. Because of the rapid development of resistant strains and the availability of new agents, use of streptomycin has been abandoned in the early treatment.

TABLE 2.—*Administration of Fluid Therapy with Ringer's Solution and Potassium Chloride*

Age	Ringer's Solution, Cc./24 Hr.	Potassium Chloride, Gm./24 Hr.
6 mo. or less	60	0.5 (7 mEq.)
6 mo. to 2 yr.	125	1.0 (14 mEq.)
2 yr. to 6 yr.	250	1 to 2 (14-27 mEq.)
6 yr. to 15 yr.	300 to 500	1 to 2 (14-27 mEq.)

Table 3 reveals the important antibacterial agents that, according to Alexander,[1] may be used either singly or in combination against the usual etiological bacteria. For the most part we agree with Alexander; however, our unpublished observations, given in parentheses, indicate instances of disagreement, except for erythromycin, which was not included by Alexander. This table shows that broad coverage is attained when a combination of sulfadiazine, penicillin, and chloramphenicol is administered. Therefore, it is our policy to administer them as outlined in table 4 by the routes designated as soon as it has been determined that the patient has acute purulent meningitis, that is, after the necessary cultures have been taken but before the etiological agent may have been identified.

If the etiological agent cannot be detected, the above treatment is continued, except that administration of aqueous procaine penicillin, 500,000 to 1,000,000 units

daily, is substituted for potassium or sodium penicillin after the patient has demonstrated clinical improvement. If the etiological organisms can be positively identified on the initial studies, or later by cultures, therapy is adjusted as follows, modified by findings of sensitivity tests, and continued for a minimum of 10 days or two weeks with an afebrile period of at least 5 days and normal spinal fluid with negative cultures.

Meningococcic Meningitis: For treatment of meningococcic meningitis, administration of sulfadiazine continues to be the single most effective drug and should be continued, maintaining blood levels of 10 mg. per 100 cc. This may be accomplished by a 50% reduction in the dose given in table 4. Administration of aqueous procaine penicillin, 300,000 to 500,000 units intramuscularly once daily, may be substituted. Administration of chloramphenicol (Chloromycetin) should be discontinued.

Hemophilus Influenzae Meningitis: For treatment of Hemophilus influenzae meningitis, administration of sulfadiazine subcutaneously should be continued until toldays. (This procedure is highly controversial and is not a routine in our hospital.) Chloramphenicol therapy might be continued until definite clinical improvement has occurred, as Deane and co-workers [2] have observed that it renders the spinal fluid sterile in three days. When tetracycline derivatives are administered in conjunction with penicillin, a higher mortality has been reported than when the broad spectrum antibiotics are not included.[3]

Micrococcic and Streptococcic Meningitis: For treatment of micrococcic and streptococcic meningitis, penicillin therapy should be continued and the dosage increased to 1,000,000 units intramuscularly every three hours. This large dose is recommended because of the apparent increase in penicillin-resistant Micrococcus organisms that Welch [4] has observed in 12.5% of outpatients and in as many as 68% of a hospitalized population. Treatment by administration of penicillin, 10,000 units intrathecally for three days, is controversial. Sulfadiazine therapy should be continued and blood levels of 15 mg. per 100 cc. maintained. Erythromycin

TABLE 3.—*Agents Effective in Treatment of Pyogenic Meningitis* *

Organism	Sulfadiazine	Penicillin	Streptomycin	Chloramphenicol	Tetracycline	Polymyxin	Erythromycin ‡
Hemophilus influenzae	+†	0	+	+	+	+	..
Meningococcus	+	+	+ (±0)	+	+	—	..
Pneumococcus	+	+	+ (±0)	+	+	—	(+)
Streptococcus	+	+	+ (+0)	+	+	—	(+)
Micrococcus	± (+0)	+ (+0)	+ (±0)	+	+	—	(+)
Escherichia coli	+	0	+	+	+	+	..
Pseudomonas aeruginosa	0	0	+ (±)	±	±	+	..
Salmonella	± (0)	0	+ (0)	+	+	+ (0)	..
Klebsiella pneumoniae	+ (±)	0	+	+	+	+	..
Proteus	+ (±)	0	+ (±)	0	0	—	..

* Modified from Dr. H. E. Alexander.[1] Our unreported observations, which differ in some respect from those of Dr. Alexander, are given in parentheses.
† +, effective agent; 0, no significant action; —, insufficient data; ±, limited efficacy.
‡ Not included by Alexander.

erated orally, maintaining a blood level of 15 mg. per 100 cc. Therapy with chloramphenicol, which is the most effective single agent, should be continued. Penicillin therapy should be stopped unless unusual sensitivity is reported by the laboratory. If necessary because of undesirable effects of the above or if great sensitivity is demonstrated, the following tetracycline derivatives may be given: tetracycline (Achromycin) or oxytetracycline (Terramycin)—40 to 50 mg. per kilogram per 24 hours orally administered; 20 mg. per kilogram per 24 hours intramuscularly or intravenously administered. Immune rabbit serum should be rarely used.

Pneumococcic Meningitis: For treatment of pneumococcic meningitis, sulfadiazine therapy should be continued in dosages to achieve blood levels of 15 mg. per 100 cc. Penicillin dosage should be increased to 1,000,000 units every two or three hours; 10,000 to 25,000 units of penicillin daily in 10 cc. of isotonic sodium chloride solution may be given intrathecally for one to three

2. Deane, G. E.; Furman, J. E.; Bentz, A. R., and Woodward, T. E.: Treatment of Meningitis with Chloromycetin Palmitate R: Results of Therapy in 23 Cases, Pediatrics **11**: 368, 1953.

3. Ahern, J. J., and Kirby, W. M. M.: Lack of Interference of Aureomycin with Penicillin in Treatment of Pneumococcic Pneumonia, A. M. A. Arch. Int. Med. **91**: 197 (Feb.) 1953.

4. Welch, H.: The Antibiotic-Resistant Staphylococci, editorial, Antibiotics & Chemother. **3**: 561, 1953.

is an effective and dependable antibiotic against these organisms when given in doses of 8 to 10 mg. per kilogram every six hours orally or intravenously. This constitutes a large dose and is used with the hope of preventing emergence of resistant strains of Micrococcus. Tetracycline derivatives, administered orally, intramuscularly, or intravenously, should be used as in H. influenzae. After sensitivity tests have been made, chloramphenicol may be used as in H. influenzae, if the clinical course of the disease justifies its use.

Escherichia Coli Meningitis: For treatment of Escherichia coli meningitis, continue sulfadiazine therapy with blood level of 15 mg. per 100 cc.; discontinue penicillin therapy; and continue chloramphenicol therapy. Streptomycin should be given in doses of 40 mg. per kilogram per 24 hours intramuscularly and 75 mg. intrathecally daily. If the patient is sensitive, administer tetracycline derivatives as in H. influenzae. Polymyxin B should be given in doses of 5 mg. per kilogram per day in four divided doses and 5 mg. intrathecally daily for one to three days.

Meningitis Caused by Pseudomonas Aeruginosa and Proteus Organisms: Meningitis caused by Pseudomonas aeruginosa and Proteus organisms is especially resistant to treatment. Continuation of sulfadiazine therapy aids

in preventing the emergence of resistant strains of Proteus. Penicillin therapy should be discontinued. Chloramphenicol therapy may be of value after sensitivity tests have been made. Polymyxin B should be used as for Esch. coli. Neomycin therapy, 400 units per kilogram intramuscularly every four hours, was used in one reported case with cure by Ditkowsky and co-workers.[5] Tetracycline derivatives usually are ineffective.

Tuberculous Meningitis: A combination of streptomycin or isoniazid with *p*-aminosalicylic acid and at times a combination of all three agents has been used in our hospital for treatment of tuberculous meningitis and represents a modification of the Public Health Cooperative Study.[6] Streptomycin, 40 mg. per kilogram per 24 hours intramuscularly, should be given for six months or longer until the cerebrospinal fluid sugar value is normal for one week and cultures are negative. Although it is our practice to give streptomycin intrathecally, there is a trend away from this practice in many centers. Isoniazid, 8 mg. per kilogram per 24 hours orally, should be given for 6 to 12 months.[7] *p*-Aminosalicylic acid, 0.2 gm. per kilogram per 24 hours, should be given for six months to one year. Tuberculin administered intrathecally as recommended by Cairns and co-workers [8] has been unsuccessful in our hands, although they report dramatic results when it is used along with streptomycin. Use of corticotropin with antimicrobial therapy is now in the experimental stages.[9]

MANAGEMENT OF COMPLICATIONS

Subdural Effusion.—Subdural effusion occurs more frequently than is generally realized and has been reported to be present in as high as 47% [10] of the cases of purulent meningitis. The pathogenesis of these subdural collections of fluid is not completely clear. It is thought that there is damage to cerebral cells secondary to arteritis and thrombosis associated with the inflammatory process. The destroyed brain tissue and the accumulation of other inflammatory products, along with an increase in vascular permeability (arteritis), results in subdural accumulation of fluid that is high in protein. Due to the osmotic pressure of the fluid, the size of the area increases as more fluid enters and, as a result, pressure symptoms make their appearance. Furthermore, a thick inflammatory membrane may form, which in itself produces pressure.

The high incidence of this complication has made bilateral subdural taps a routine procedure in certain hospitals. It is our opinion, however, that subdural taps should be omitted in those cases in which patients are making an uncomplicated recovery and are indicated when one or more of the following signs are observed: (1) persistence of fever beyond three to five days; (2) recurrence of fever after a period of normal temperature; (3) continued increase in intracranial pressure as evidenced by a tense fontanel, enlarging head, vomiting, and convulsions; (4) focal neurological signs; and (5) any indication of unsatisfactory convalescence. Subdural taps through the fontanel or through burr holes in older children, withdrawing not more than 25 to 30 cc. at a time, should be performed at daily intervals until the formation of fluid decreases appreciably, and then at two or three day intervals. In those cases in which there is an unusual persistence of fluid beyond 10 days, surgical removal of the membrane is recommended. It is important to culture the subdural fluid and continue the administration of antibacterial agents until the infection has been eradicated.

Waterhouse–Friderichsen Syndrome.—Waterhouse–Friderichsen syndrome, a serious complication, occurs more frequently in meningococcic and hemolytic streptococcic meningitis than in the other forms. The syndrome is brought about by acute adrenal failure secondary to hemorrhage and necrosis of the glands. It is characterized by the sudden onset of shock, prostration, and cyanosis. The pulse is fast and feeble, and the blood pressure is low. The skin is cold and clammy with petechiae and ecchymotic areas. Heroic therapeutic measures are required and include prompt intravenous administration of 1,000,000 units of aqueous penicillin and 0.15 gm. per kilogram of sulfadiazine sodium, to be followed by the schedule as outlined above. It is essential that adequate 10% glucose in water and at least twice the recommended quantity of Ringer's solution be given intravenously. Blood transfusions are imperative in the management of this syndrome. In addition, 50 to 100 mg. of hydrocortisone should be given intravenously,[11] followed by a similar dose intramuscularly every two hours for two or three doses and then 100 mg. once or twice daily for three to five days, depending on clinical course. Hydrocortisone should be withdrawn gradually over a period of five to seven days. Arterenol (nor-epinephrine), 4 cc. of 1:1,000 solution in 1,000 cc.

TABLE 4.—*Administration of Agents Effective in Treatment of Purulent Meningitis*

Drug	Dosage and Administration
Sulfadiazine sodium as a 5% solution	3 cc./kg. (0.15 gm./kg.) immediately subcutaneously, then 6 cc./kg. (0.30 gm./kg.) in 4 doses per 24 hr.
Sulfadiazine	Similar dosage when tolerated orally
Penicillin, sodium or potassium	500,000 units I.M. immediately and every 3 hr.
Chloramphenicol	40 mg./kg. I.M. or I.V. immediately 50 mg./kg. orally immediately 50 mg./kg. I.M. or I.V. daily, 4 divided doses 100 mg./kg. orally daily

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6. Chemotherapy of Military Tuberculosis and Tuberculous Meningitis: A Public Health Service Cooperative Investigation, Pediatrics **12**: 38, 1953.

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8. Cairns, H.; Smith, H. V., and Vollum, R. L.: Tuberculous Meningitis, J. A. M. A. **144**: 92 (Sept. 9) 1950.

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11. Hodes, H. L.; Moloshok, R. E., and Markowitz, M.: Fulminating Meningococcemia Treated with Cortisone: Use of Blood Eosinophil Count as a Guide to Prognosis and Treatment, Pediatrics **10**: 138, 1952. Griffin, J. W., and Daeschner, C. W.: Meningococcal Infections: With Particular Reference to Fulminating Meningococcemia (Waterhouse-Friderichsen Syndrome) Treated with Cortisone and Norepinephrine, J. Pediat. **45**: 264, 1954.

of saline given intravenously for approximately 24 hours at a rate sufficient to maintain a satisfactory response, has proved valuable in combating peripheral circulatory collapse.

Other Complications.—Other complications such as convulsive disorders, emotional disturbances, behavior problems, and mental deficiency, which may follow, especially in serious cases, should be treated as they occur.

CONCLUSIONS

If the diagnosis of meningitis is established early and followed promptly by an intense and adequate therapeutic and supportive treatment, the mortality and undesirable sequelae from this disease will be minimized. Early recognition of the complications followed by energetic treatment also has an important place in the management of this disease.

848 Adams St. (5).

HYPNOTISM IN PREGNANCY AND LABOR

Sol T. DeLee, M.D., Chicago

The manifold phenomena of hypnosis are being intensely studied today by physicians, surgeons, dentists and clinical psychologists to build a new science from the foundation of an ancient art. With psychoanalysis and psychosomatic medicine still meeting with some resistance by the medical profession, hypnotism, quite naturally, is receiving an even more critical examination. Yet, it is in relation to these specialties that it is of the greatest therapeutic value. Hypnotism, at the present time, is also receiving considerable studied application in obstetrics. The purpose of this presentation, therefore, is to evaluate and discuss its use, advantages, and disadvantages in obstetrics in selected patients and to briefly review its history in medicine. Our knowledge of the motivations behind human behavior is still inadequate to explain all of the complexities of mental dysfunction. The lack of understanding of the phenomena of hypnosis strongly emphasizes our deficiencies in this regard. Plainly, this invites antagonism to the use of hypnosis, because it threatens our complacency concerning accepted beliefs and contributes to doubts that have relegated hypnosis to the background. Extravagant and unfounded claims by some of its ardent proponents, plus sensationalism in its application in the field of entertainment, account for further opposition.

BACKGROUND

Since its earliest use by the ancients, hypnotism has always been erroneously associated with supernatural powers. This is not surprising, as a study of its history points up its connection with the bizarre, mysterious, and unknown as they relate to the unexplored regions of the mind. From antiquity, hypnotism has played a role in religion and medicine, and the phenomena produced by medicine men, witch doctors, and priests have always been ascribed to miracles performed by the gods. In Egypt there were "sleep temples," and a papyrus more than 3,000 years old describes hypnosis much as it is used today. In Greece, the sick were treated and cured through hypnosis by religious leaders. The Hindu fakir, the South Pacific fire dancer, and the Indian yogi of today use self-induced hypnotic analgesia to make their feats possible.

Assistant Clinical Professor, Obstetrics and Gynecology, University of Illinois Medical School, and Attending Physician, Chicago Maternity Center.

The therapeutic use of hypnosis was revived late in the 18th century, when a Catholic priest, Father Gassner, obtained hundreds of "faith cures" through its methods. Franz Mesmer of Vienna, impressed by Father Gassner's results, employed the art during the early 19th century and developed a large following in the medical profession. Many authentic cures by "magnetism" were reported. Mesmer's methods, however, as well as those of his followers, overlooked the role of suggestion in alleviating disease and suffering. Unfortunately too, his methods were spectacular and frequently bordered on charlatanism. The latter stigma, along with the inexplicable phenomena, eventually alienated his colleagues, and Mesmer ultimately was ostracized by the medical profession, a fate subsequently known to many men who pursued their interest in this field. James Braid, a Scotch physician, merits the title of "father of modern hypnotism," although Liebeault, a 19th century French physician, is often given the credit. Liebeault coined the terms hypnotism and hypnosis and wrote many papers, as well as an authoritative book on the subject. Liebeault founded the Nancy school and developed the theory that suggestion was the key to hypnosis. The first surgical operations using hypnosis were performed by Recamier in 1821. Cloquet reported his use of hypnotic anesthesia in surgery to the French Academy of Medicine in 1829. In America at about the same time, Wheeler did a nasal polypectomy employing hypnosis, its first such use in this country.

The new science grew, and, in 1840, James Esdaile, an English surgeon practicing in India, reported thousands of operations using hypnosis; more than 300 of these involving major surgical procedures, such as limb amputations. His book describing these operations is a library treasure today. Since then, particularly in the last two decades, numerous authoritative articles have appeared in the scientific literature, describing the anesthetic applications of hypnosis in obstetric and surgical procedures. Although slowly accepted, hypnotism emerged as a science around 1890, when Bernheim, a French physician, perfected techniques that are still used for induction of hypnosis. He, like Liebeault, recognized that suggestion was the basis for hypnosis, and his unimpeachable reputation added to the growth of the science. This form of therapy began tc come into its own, and many recognized scientists, including Charcot,

Freud, Pavlov, Babinski, and Janet, accepted its validity. In America, Phineas Quimby, a leading practitioner, became historically famous by treating Mary Baker Eddy for a neurotic condition. She was enthusiastic about his methods but denied that hypnosis had played a role in the results. Shortly thereafter, she evolved her own theory of healing, known today as Christian Science. For a complete history of Christian Science and its relation to hypnosis, the reader is referred to Bromberg.[1]

Hypnotism currently interests many psychiatrists, anesthesiologists, obstetricians, gynecologists, and dentists. Today's literature is filled with impartial investigations of hypnotherapy for psychosomatic conditions. The recent war demonstrated the value of hypnoanalysis in combat fatigue and other war neuroses. Its success has helped considerably in reducing the disdain, fear, and apprehension that formerly plagued this valuable entity. No longer shrouded in mysticism, it has emerged as an established aid to depth psychology. Hypnotism (from the Greek "hypnos" meaning sleep) is a method of inducing relaxation, during which susceptibility to suggestion is increased. An all-inclusive definition of suggestion describes it as an idea that the person accepts uncritically, which thereby enables him to initiate appropriate behavior. The degree of suggestibility to hypnosis depends on the depth of the various stages. Some authorities describe as many as nine stages; others five or six. Three arbitrary hypnotic stages, however, which frequently overlap, are generally recognized; namely, light, medium, and deep. These are equivalent to the lethargic, cataleptic, and somnambulistic stages. They do not include a condition of a slight degree of suggestibility, which is termed hypnoidal, wherein relaxation and drowsiness are present.

For practical purposes, only the light and deep stages will be considered here, although it must be emphasized that this is most inadequate for experimental or scientific investigation. The light stage is characterized by eye and limb catalepsy, lassitude, and heeding of simple posthypnotic suggestions, as well as partial analgesia and anesthesia. During deep somnambulism, there is marked responsiveness to posthypnotic suggestions, complete analgesia, anesthesia, and posthypnotic amnesia. Although analgesia means the absence of sensibility to pain and anesthesia the loss of sensory perception, this author, as well as those herein referred to, use the term anesthesia more broadly to include also the absence of pain sensitivity. In somnambulism too, one can produce recall of memory and age regression, as well as both positive and negative sensory hallucinations. The foregoing phenomena are the only ones of significance in our present study. Many others, important to the clinical psychologist and psychiatrist, are omitted. Individual reactions vary greatly. The objective symptoms of the deep hypnotic state may be evidenced in a person in a medium or light trance, and symptoms of the light stage can occur or may be absent in a person deeply hypnotized.

ADVANTAGES

The late J. B. DeLee [2] recognized early that profound relaxation during delivery in some patients could best be obtained by hypnosis. He wrote, "The only anesthetic without danger is hypnotism. . . . I am irked when I see my colleagues neglect to avail themselves of this harmless and potent remedy." The advantages of hypnotism in obstetrics are many and may be enumerated as follows: 1. Because the patient is treated in an unusual and special manner and because suggestibility is present, she is likely to have a more pleasant pregnancy, free from the ordinary discomforts associated with this condition, such as nausea, pressure, and cramps. 2. Fear, pain, and apprehension before and after labor are eliminated. 3. It is possible to allow the mother to experience the sensations of childbirth without attendant pain. 4. Uterine contractions often can be either accelerated or retarded by suggestion. 5. Blood loss is considerably reduced owing to vasoconstriction of the capillaries. 6. Elimination of pain decreases shock and facilitates recovery. 7. The responsive patient cooperates more fully, this being particularly valuable during the expulsive stage. 8. There are no undesirable postoperative effects from hypnosis as with most other anesthetics. 9. In premature deliveries hypnosis is of especial advantage because it reduces fetal anoxia. 10. Hypnosis raises resistance to fatigue by about 20%, minimizing maternal exhaustion. 11. Hypnosis is indicated in persons who are allergic to anesthetic agents. 12. Chemical anesthesia, especially ether, depresses uterine activity and interferes with the normal mechanism of labor; this is not so with hypnoanesthesia. 13. The first stage of labor can be reduced. According to a controlled series by Abramson and Heron [3] the first stage of labor was reduced by two hours; in a controlled series by Michael,[4] the first stage of labor was reduced by approximately four hours in primiparas and by about 15 minutes in multiparas. Michael further points out that the second stage of labor in his series was reduced by one hour in primiparas; in multiparas the time was only insignificantly different.

DISADVANTAGES AND DANGERS

Many physicians familiar with the potentialities of hypnosis are enthusiastic about its results in selected patients. Previous publications [5] note that its use in obstetrics can be most effective despite certain objections and limitations. It has been estimated that as high as 90% of normal persons can be hypnotized to some degree. Success depends largely on the skill of the operator and the inherent susceptibility of the patient. In spite of the high percentage of susceptible persons, surgical anesthesia can be induced in only about one out of four patients, and even in these it may not be complete. This limitation, of course, is a valid objection to its use as an anesthetic agent. The time necessary to achieve rapport and a satisfactory trance depth suitable for surgery is another disadvantage. In parturition, with the patient's knowledge and permission, a trained hypnotherapist

1. Bromberg, W.: Man Above Humanity: A History of Psychotherapy, Philadelphia, J. B. Lippincott Company, 1954.

2. DeLee, J. B., and Greenhill, J. P.: Year Book of Obstetrics and Gynecology, Chicago, Year Book Publishers, Inc., 1938, pp. 142-144.

3. Abramson, M., and Heron, W. T.: An Objective Evaluation of Hypnosis in Obstetrics: Preliminary Report, Am. J. Obst. & Gynec. **59**: 1069-1074 (May) 1950.

4. Michael, A. M.: Hypnosis in Childbirth, Brit. M. J. **1**: 734-737 (April 5) 1952.

5. Kroger, W. S., and DeLee, S. T.: The Use of the Hypnoidal State as an Amnesic, Analgesic and Anesthetic Agent in Obstetrics, Am. J. Obst. & Gynec. **46**: 655-661 (Nov.) 1943; The Psychosomatic Treatment of Hyperemesis Gravidarum by Hypnosis, ibid. **51**: 544-552 (April) 1946.

should be available throughout the entire labor, unless autohypnosis has been induced through posthypnotic suggestion. The presence of the operator for a prolonged period makes an additional expense for the patient. This objection will be largely eliminated as hypnoanesthesia grows in use and more trained personnel are available.

In a deeply disturbed person, either psychotic or borderline psychotic, hypnosis is contraindicated, except by one also trained in dynamic psychiatry. There is little possibility, however, that hypnosis can precipitate a psychotic condition, but the likelihood that it might be held responsible is much greater. Psychotics are difficult, almost impossible, to hypnotize, but even if they proved susceptible, the dangers would be minimal. Such patients, of course, should not be treated by the general practitioner. Some psychiatrists and others contend that hypnosis fosters extreme dependency. For example, Jacobson [6] favors relaxation methods in labor and Read's simplified techniques but believes that psychiatric suggestion and hypnoidal states in obstetrics are unreliable—they may cloud symptoms and produce analgesia in only about 10%—and unsuitable for the average patient. Jacobson further states that hypnosis tends to increase personal dependence. This may be true, but a strong bond of dependency exists in every doctor-patient relationship, especially between obstetrician and patient. This dependency, however, is only temporary and of no permanent importance, although it can be used advantageously at the time to establish greater confidence in the obstetrician. As in psychotherapy, this dependency serves to bind the patient in treatment during the initial interviews when rapport is not too firmly established. Later, the reasons for the dependency can be worked through and dissolved.

Cultural attitudes still exist toward hypnotism that undoubtedly cause many physicians to have an unreasonable aversion to its practice and clinical application. Fear of failure influences many others in not employing it. Still others, realizing the clinical advantages of hypnosis, do not like to assume the role of hypnotherapist or operator because of fear of being stigmatized. The delicacy one must apply in dealing with hypnotism is another objection to its use in private practice and points up the fact that until its value is more fully understood and accepted, it is a method best accepted by the doctor at the patient's request. These objections can be eradicated if patients understand that the physician is only trying to teach them how to assume healthy attitudes and that there are no magic powers invested in him.

PREPARATION

When a gravida decides to have her baby under hypnosis, one must empirically determine her responsiveness. Of course, every patient is not susceptible to deep hypnosis, and the therapist must establish her potentialities before the onset of labor. Rapport is essential, this being defined as the harmonious relationship between subject and therapist. Once the subject cooperates in carrying out a suggestion, rapport is definitely established. Although no less time-consuming than preparing patients for natural childbirth, training for hypnosis is not elaborate. Patients do not have to read, exercise, or attend prenatal training classes. After inducing hypnosis several times before labor, and during each session giving posthypnotic suggestions that labor will be painless, one can easily raise the pain threshold. Repeated conditioning readily enables the patient to reach the deeper stages of hypnosis. The patient is told that she will look forward to her pregnancy and confinement with a feeling of joy and happiness, instead of dread and apprehension. The more these posthypnotic suggestions are repeated, the more effective they become. She is repeatedly told that she will promptly fall into a deep hypnotic state in response to a given command at any time. Suggestions must be made in a dignified, firm manner, and it is imperative that the gravida maintain complete confidence in her physician and/or therapist and the method at all times. After adequate preparation, she can be put into a somnambulistic state in a matter of seconds.

Response to posthypnotic suggestions and production of amnesia and anesthesia during the prenatal training period give the indication that the patient is ready for all the stages of labor. An Allis clamp or sterile needle may be used for testing the depth of anesthesia. Complete anesthesia during parturition is often accompanied by amnesia, and these are attainable by command. Amnesia for part or all of the labor and delivery can be induced or removed at the suggestion of the therapist, according to the previously expressed wishes of the patient. Ideally, conditioning should begin during the third or fourth month of pregnancy. The patient should be hypnotized two or three times a month until the stage of deep hypnosis is reached. Just how many visits a patient will require before one can feel confident of satisfactory anesthesia is uncertain; it can be 1, 20, or even more. Usually, if after 10 sessions anesthesia is not obtained, the outlook is poor. Patients must be informed in advance of the possible time element so that early discouragement is avoided. Hypnosis cannot be induced in some patients, owing either to insusceptibility or a lack of rapport between the therapist and that particular individual. There may also be an inconsistency of response from time to time in the same individual.

Many excellent hypnotic techniques are described, and several authoritative books are available on this subject.[7] Here it should be emphasized that physicians desiring instruction in hypnotism should seek it from reputable and qualified scientists, rather than from lay practitioners not conversant with its medical applications. If a trained hypnotherapist is to induce the hypnosis rather than the obstetrician himself, the patient will visit the therapist as often as is necessary until late in pregnancy, at which time, or whenever the maximum degree of hypnosis has been reached, a transference of control may be affected; that is, unless it has been prearranged between the patient and obstetrician that the therapist is to be with the patient throughout her labor. A good somnambulist, through posthypnotic suggestion, is capable of inducing self-hypnosis and by autosuggestion can eliminate the fear, tension, and pain associated with childbirth.

6. Jacobson, E.: Relaxation Methods in Labor: Critique of Current Techniques in Natural Childbirth, Am. J. Obst. & Gynec. **67**: 1035-1048 (May) 1954.

7. Schneck, J. M.: Hypnosis in Modern Medicine, Springfield, Ill., Charles C Thomas, Publisher, 1953. Wolberg, L. R.: Medical Hypnosis: vol. 1, the Principles of Hypnotherapy; vol. 2, the Practice of Hypnotherapy, New York, Grune & Stratton, Inc., 1948.

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LABOR

When labor begins, as determined by the presence of regular contractions at intervals of five to six minutes lasting 30 seconds or more, or by the existence of a dilating cervix, regardless of the character of the contractions, the patient should be hospitalized and placed in a hypnotic state. This can be done by the physician personally, or by his speaking to her over the telephone, or by an assistant, such as a nurse, presenting her with a written order—all depending on the prenatal training and conditioning. Later, the hypnotist's presence is necessary to prolong the trance and prevent it from lapsing into natural sleep from which the patient could awaken with actual distress. Suggestions are given for complete anesthesia and usually amnesia. The patient appears to be relaxed and asleep, even during the height of labor and the delivery phase. As previously stated, it is possible for the patient to experience some of the sensations of childbirth, yet feel no discomfort. Michael [8] states that "The question of a disturbance in the normal mother-child relationship has been raised, but it is felt that this relationship, rather than being impaired, is actually enhanced, as the mother retains no unpleasant memories of the childbirth." Contractions can be felt as a tenseness of the abdomen and the bearing-down reflex as slight perineal pressure. Participation, as well as full knowledge of all occurrences, can be effected upon command, or amnesia (partial or total) can be induced. It is thus that a spontaneous or operative delivery is managed, whether the operative procedure be a major or minor one.

COMMENT

For centuries research has been unsuccessful in explaining the true mechanism of hypnosis and its associated psychological and physiological phenomena. That there is no acceptable theory of hypnosis is due to the fact that most investigators attempt to explain trance induction and its phenomena rather than the actual hypnotic state per se. It has been postulated in the literature that the hypnotic state was once used in primitive men as a defense mechanism to ward off fear or danger. Some believe that the hypnotic state in susceptible persons is, in reality, a throwback to the state of catalepsy, so commonly observed in frightened animals when they "freeze" to the landscape to escape detection. The presence of a fully developed cortex now makes such instinctual defense mechanisms unnecessary; however, this atavistic tendency is closer to the surface in good subjects than in those who are not readily hypnotizable.

Schneck,[9] likewise, in terms of its basic ingredient views the hypnotic state as that condition represented by the most primitive form of psychophysiological awareness of individual-environmental differentiation that can be obtained among living organisms. He believes that the bringing to the fore of this most primitive state and its retention to some degree exists among all biological forms. Howarth [10] agrees that "hypnosis has been present since the days when living matter originated in the primeval mud." He contends that hypnosis results whenever the organism reacts to stimuli or "input" suggestions from the environment. He believes that clinical hypnosis is a special form of suggestibility, based mainly on the ability of the higher neural centers to interpret semantic representations. Any stimulus is thus a suggestion from the environment, but whether it is acted upon depends upon a previously established sensory order or, to use a more common term, "the meaning of things." Hence, hypnosis is essentially the process of creating attitudes suitable for the acceptance of suggestion.

These theories certainly do not irrefutably answer all of the questions. Some refer to hypnosis as a form of sleep, yet the hypnotic state is not natural sleep nor is it unconsciousness. Brain waves, reflexes, galvanic skin reactions, cerebral circulation, and blood pressure readings in hypnosis are identical to the normal state and differ from true sleep in the same person. Our most sensitive investigative techniques have not produced the answers. There are many other theories as to the nature of hypnosis, and the literature is boundless on the subject. The practical question is whether or not it is useful, and if so, why not add it to our armamentarium?

There is no doubt that the anticipation of pain is an important factor in the intensity with which it is felt. Such expectation and fear can be effectively relieved with suggestions given during even light hypnosis. Common sense discussion and education can have the same effect, although these are more time-consuming and often less effective. The same arguments that favor a natural childbirth program make the use of hypnosis desirable. In fact, this author,[11] whose experience with hypnosis in obstetrics is moderately limited, concurs in the conviction of Mandy [12] and others that some successful natural childbirth patients have been hypnotized to a degree; they have reached at least a light and, in some instances, a medium trance not dissimilar to a waking hypnosis without self-awareness and usually without the knowledge of the doctor. Most patients under Read's system demonstrate at least some of these phenomena. Whether natural childbirth is by means of hypnosis or not is unimportant here. What is pertinent is the similarity of advantages and results. With education through reading, class instruction, exercises, and suggestive therapy, natural childbirth patients lose anxiety and fear and much discomfort both in pregnancy and labor. They enjoy their experiences and are very cooperative and relaxed patients. Of course, many natural childbirth patients have pain during the last part of the first stage and entire second stage but certainly less than those unprepared. Furthermore, they require less use of analgesic and anesthetic agents. The same can be said of patients who train for hypnosis. They are more cooperative and require fewer, if any drugs.

SUMMARY AND CONCLUSIONS

During the past decade, as a result of the interest of the medical profession in suggestive relaxation methods for painless childbirth, a marked increase in the scien-

8. Michael, A. M.: Hypnosis in Childbirth, Brit. M. J. **1**: 734-737 (April 5) 1952.

9. Schneck, J.: A Theory of Hypnosis, J. Clin. & Exper. Hypnosis **1**: 16-17 (July) 1953.

10. Howarth, E.: A New Theory of Hypnosis, J. Clin. & Exper. Hypnosis **1**: 42-47 (Oct.) 1953.

11. DeLee, S. T.: Trends in Natural Childbirth, Journal-Lancet **74**: 215-221 (June) 1954.

12. Mandy, A., in discussion on Reid, D. E., and Cohen, M. E.: Evaluation of Present Day Trends in Obstetrics, J. A. M. A. **142**: 615-623 (March 4) 1950.

tific applications of hypnosis has become apparent. It has been a belated but welcome recognition of the usefulness of hypnoanesthesia, either as an anesthetic agent or as an adjunct to chemoanesthesia. Hypnosis in parturition is far from a panacea nor will it ever supplant chemoanesthetic agents. Nevertheless, its applications are growing daily, and it is proving a powerful ally in alleviating other functional conditions in obstetrics and gynecology; this is also true in other clinical fields. Seminars by qualified scientists to teach all aspects of clinical hypnosis are increasing rapidly, and the British Medical Association recently recommended that all physicians be grounded in the basic principles of hypnotherapy. It must be emphasized that in order to successfully employ hypnotic techniques for psychotherapy, one must be oriented or trained in psychodynamics. More active participation and education in hypnotic methodology will help dispel misunderstanding and apprehension among the laity. Thus, if judiciously employed, another valuable technique will be available to more physicians who wish to mitigate the pain of parturition.

104 S. Michigan Ave.

A NEW METHOD OF MANUAL ARTIFICIAL RESPIRATION FOR INFANTS AND SMALL CHILDREN

Capt. Harold J. Rickard (MC), U. S. N.

Present Methods of Resuscitation

It has been written, "One of the serious indictments of modern specialized medicine is the lack of knowledge of many doctors of how to perform effective artificial respiration in emergency situations. For example, is it not true that many times the doctor is embarrassed in the presence of a crowd around a drowned or electrocuted person because he realizes that he is less competent to perform a life-saving act than the Boy or Girl Scout, the policeman or the fireman who stands watching his fumbling efforts at resuscitation?" [1]

If the above quotation, written by prominent physicians, approximates the truth, and I personally have reason to believe that it does, we might properly ask what fumbling efforts at resuscitation, if any, are being made by the average lay person and why?

It is my candid opinion, based upon more than 35 years of practical experience in the resuscitation field, that the indictment is not due so much to the lack of knowledge but rather to the lack of practice and the relative infrequency of opportunities for practical application. The act of giving effective artificial respiration in emergency situations, in fact in all situations involving asphyxia, is developed in two distinct stages. The theoretical stage can be learned by lectures and informal talks on the subject. The practical stage can be obtained by experience and practice only. It cannot be taught; it must be acquired. These facts do not seem to be well understood by the general public. Hence the physician in emergency situations, in public, is more apt to gain public criticism for his honest, though possibly fumbling, efforts than the rescue squads of fire departments, police, and Boy Scouts, who devote much available time and effort in practice and most certainly have more opportunities for practical application of the art of resuscitation, both manual and mechanical, than the average physician. Regardless of whether this constitutes a valid excuse for the average physician, in the eyes of the public it still remains a fact, and the average lay person would seem to be much worse off in this respect due to his or her lack of theoretical knowledge. Consequently, any effective method or technique of a resuscitative nature should, insofar as possible, eliminate or alleviate these chances for error by the average physician and layman. The vital and effective components should be as nearly automatic as it is humanly possible to make them.

The successful and widespread use of the modern mechanical resuscitator has been mainly due to the fact that these important components are provided for in a mechanical way. Aspiration and a mechanical airway are provided not only to obtain but also to maintain an unobstructed and adequate airway. Pressures are controlled and applied by automatic cycling in a constant and rhythmic rate with minimum variation throughout the entire procedure.

Finally, the manual effort expended by the operator is negligible. At present there is practically unanimous agreement that these units are safe and effective. However, the fact remains, as has been pointed out many times in the past, that they are usually not available to the average doctor or layman when an emergency arises. On the other hand, if it were possible to utilize and duplicate several of the most important components in a manual method in which extra equipment was not necessary, the results would be not only safe and effective but also extremely adaptable to resuscitative efforts in infants and small children.

HISTORY OF ARTIFICIAL RESPIRATION

When one digests the literature dealing with the history of artificial respiration, one important thing stands out glaringly, and that is the apparent reluctance of the medical profession as a whole to take the lead in this most important subject. It is true that many members of the profession made notable contributions in this field in the past, as individuals, but it was not until within the past several years that a concerted effort was made by the entire profession. This effort was brought about primarily by the vital interest of the members of the medical profession serving in the armed forces and by association with civilian medical groups. The results of these conferences and of laboratory and clinical experimental work culminated in a proposed change from the

From the U. S. Naval Air Missile Test Center, Point Mugu, Calif.

The opinions and/or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

1. Cullen, S. C., and Gross, E. G.: Manual of Medical Emergencies, Chicago, Year Book Publishers, Inc., 1950.

Schafer (prone pressure) method to that of the Holger Nielsen (arm lift–back pressure) method, which is a modification of the Nielsen technique used successfully for 20 years in the Scandinavian countries. The proposed change was officially approved and adopted by practically all major organizations vitally interested in this subject. This included the armed forces, the American National Red Cross, the Federal Civil Defense Administration, the Public Health Service, the Bureau of Mines, the Boy Scouts and Girl Scouts of America, the American Telephone and Telegraph Company, the Council on Physical Medicine and Rehabilitation of the American Medical Association, and others.[2]

It should be pointed out that the arm lift–back pressure method was proposed, approved, and adopted as the preferred method but that modifications and even other methods, such as the Silvester (arm lift–chest pressure) method, may at times and in certain complicated cases have to be utilized. These situations could occur in cases of injury and advanced pregnancies.

APPLICATION OF EXISTING METHODS TO INFANTS AND SMALL CHILDREN

There should be no question, after the excellent reports by many well-known authorities, of the efficiency of the arm lift–back pressure method on all humans. However, I seriously question the safety factor with which this method may be efficiently applied to infants and small children, for the most part by willing but comparatively inexperienced hands and under the mental stress of a human catastrophe. In the presence of such emergency situations, excitement and fear of a possible fatal result is bound to prevail, and under such circumstances vital errors usually are committed. Probably the outstanding error most frequently committed is that of inadvertently exerting undue pressure on the rib cage in accomplishing the expiratory phase. Experienced personnel realize that such pressure is rather difficult to control if the maneuver is carried out according to standard instructions. Actually, the operator is not or should not be exerting pressure by pressing but rather by keeping the elbows stiff and using a rocking maneuver of his body, thus utilizing his upper body weight to effect the pressure that performs the expiratory phase. Consequently, as has happened in the past, even in experienced hands, ribs have been fractured accidentally, and in a number of cases lung tissue has been punctured. These complications have occurred in the past when the prone pressure method was the accepted one of preference and the pressure, for the most part, was supposedly applied in the region of the floating ribs, which anatomically have a variable amount of give over and above that usually possessed by a fixed rib. In contrast, it should be noted that, with the presently accepted arm lift–back pressure method, this pressure is exerted entirely on a fixed rib area that should be more vulnerable. In a final analysis it should be apparent that the greater the disproporation in the size and weight of the operator with that of the subject the more probable is the chance of accidental injury to the subject. Likewise, an overzealous operator, especially a lay person with limited practical experience, could perform in an unsafe manner, while his counterpart through knowledge and fear of the consequence of injury could perform in an overcautious and ineffective manner. In spite of these possibilities by inexperienced or experienced operators, the fact remains that in cases of injury, the arm lift–back pressure method, with the modifications as recommended, is the safest, most practical, and most effective method of manual artificial respiration in the majority of cases of adult asphyxiation.

The resuscitative span in the human species must necessarily extend from birth through infancy and early childhood and from young and older adults on into the aged groups to be all-inclusive. This thought was expressed, quite pointedly, by Dr. Julius H. Comroe Jr., who in September, 1950, while presiding over one of the sessions at a conference on artificial respiration held at the medical division, Army Chemical Center, Maryland, closed the discussion with several general remarks including: "From the various studies that have been reported here this morning possibly one has to find out whether the findings hold in small children, infants, and the aged."[3]

It is difficult to believe that the importance of this remark was completely missed by all in attendance at this conference, since many outstanding contributors to the field of artificial resuscitation were in the audience. However, I have no knowledge of any experimental work that has been done nor have I been able to locate any published experimental data concerning manual resuscitation in infants, small children, and the aged. It will be assumed that those who may have contemplated any such experimental work in these groups were deterred in their efforts by the same reasons that I have been deterred: 1. It would be very difficult, if not impossible, to find families who would volunteer infants and small children for any such experimental work, regardless of how safe the procedures were intended to be. 2. The courts would frown upon any such experimental work on minors. 3. Last, but most important, the workers themselves would be very reluctant to deliberately place infants and small children in a state of apnea, because of the inherent risk involved. In this respect it will be recalled that the subjects used by Gordon and co-workers[4] in their experimental work were normal human adults who volunteered their services and who were given curare and anesthetized.[5]

FOUR RESUSCITATIVE AGE GROUPS

Because of the unavailability of any such data at present and the high improbability of any being obtained in the near future, it becomes necessary for the purpose of this paper to assume that in a comparable way the experimental data obtained from the excellent work done on normal adults will be essentially applicable to infants and small children. It seems only reasonable to expect

2. Manual Artificial Respiration Media Fact Sheet, Department of Defense, Office of Public Information, unpublished report.

3. Comroe, J. H., in discussion, in Special Report, Conference on Artificial Respiration, held at Medical Division, Army Chemical Center, Maryland, on 29-30 September 1950 (April) 1951, p. 37.

4. Gordon, A. S.; Sadove, M. S.; Raymon, F., and Ivy, A. C.: Critical Study of Manual Artificial Respiration, J. A. M. A. **147**: 1444 (Dec. 8) 1951.

5. Gordon, A. S.; Raymon, F.; Sadove, M., and Ivy, A. C.: Manual Artificial Respiration: Comparison of Effectiveness of Various Methods on Apneic Normal Adults, J. A. M. A. **144**: 1447 (Dec. 23) 1950.

that these data on tidal exchange and venous return are applicable to infants and small children in a comparable way when their size and anatomic structures are compared with those of an adult. It has already been mentioned that artificial respiration must be applicable to all ages of the human species, and I will for convenience divide them into four approximate resuscitative age groups: (1) newborn infants, (2) infants and small children, (3) adults, and (4) the aged. The person's sex would not appear to have any direct bearing on the over-all subject of resuscitation with the possible exception of advanced pregnancy. In such cases it will be necessary to modify the procedure accordingly.

Resuscitation of Newborn Infants.—Newborn infants will be mentioned only for completeness, as there is a more or less universal tendency to treat resuscitation of this group separately and as a special problem. The etiological factors are usually quite different and the emergencies occur at a time and place where it is basically not necessary to resort to manual methods of artificial respiration.

Resuscitation of Adults.—Resuscitation of adults is covered adequately by the arm lift–back pressure method with modifications in cases of injury and the arm lift–chest pressure method in cases of advanced pregnancy where the supine position would not seriously interfere with obtaining and maintaining an adequate airway.

Resuscitation of the Aged.—In the absence of any adverse experimental data in the aged group and in view of the practical results obtained in the past, it is felt that the same methods as applied to the adult group would be safe and efficient, provided cognizance is taken of any marked infirmities.

Resuscitation of Infants and Small Children.—The group infants and small children has purposely been changed to last for discussion because basically it is the subject and purpose of this paper. Before I go into the discussion and proposal of a new method, the question might very well be asked, what is or has been wrong with the old method? The truth of the matter is that all of the proposed methods of the past and present have serious shortcomings, from a practical standpoint, in infants and small children, and in a final analysis it is the practical application that determines the results in this group as well as in the others. These methods could not be considered safe, neither could they be deemed efficient. These are not simply words of condemnation; they are practical facts that can be attested to by individuals who have gained recognition in the practical application of resuscitation and as qualified operators. Probably among the outstanding groups in this category are the so-called rescue squads who are usually a part of the fire department of large and small municipalities. They are the groups who respond to most of our asphyxial emergencies and consequently receive most of the opportunities for practical application and evaluation of resuscitation methods, both manual and mechanical. However, these groups are becoming more and more dependent upon their excellent mechanical equipment rather than upon manual methods. Furthermore, the lapse in time of arrival, which is the most important single element in cases of asphyxiation, is not conducive to a recovery. Someone on the scene must be prepared to act intelligently, safely, efficiently, and, most important, immediately. Seconds are paramount, and they pass by very rapidly. This is not time to seek aid but rather the time to give it.

SPECIAL CONSIDERATIONS FOR INFANTS AND SMALL CHILDREN

In reviewing numerous textbooks on pediatrics, in respect to the weights and sizes of infants and small children included in this age group and in which such a method would have practical application, some general conclusions may be drawn. In a general way, one may conclude that such a method must be applicable in practice to infants and small children from the time they are taken home from the hospital weighing approximately 7 to 8 lb. (3,175.14 to 3,628.73 gm.) with an average over-all length of 20 to 21 in. (51 to 53 cm.) until they reach the age of 1½ to 2 years, weighing approximately 24 to 28 lb. (10.9 to 12.7 kg.) with an average over-all length of 31 to 33 in. (79 to 84 cm.).

This age group has been frequently and aptly referred to as children of the helpless age and children of the age of exploration. They constitute not only a very large group but also a group in which many asphyxial emergencies occur with, unfortunately, too many fatal results. According to the present trend toward increased birth rates, this group may likewise be expected to expand in the immediate future with a probable increase in asphyxial emergencies and deaths. Accounts in the daily newspapers throughout the country, as well as the syndicated press, would imply that this age group is exposed to more hazards that frequently lead to asphyxial death than any other group. If this is true, it is likewise true that many of these hazards are the result of the inherent human weaknesses to which we as adults are all subject. For example: The young mother didn't understand that a helpless infant could smother in a nice fluffy pillow or strangle in a crib or that the child left in the bath tub while she answered the door bell or telephone would drown in such a short time. The father never suspected that the neighbor's child could enter an unlocked and open gate to an otherwise well-fenced swimming pool and drown in the short time it would take him to answer the telephone. The corner grocery was just across the street, but the unguarded electric socket was closer than that to a mother's young explorer at the tender age of 1½ years. Thousands of such cases are known and many thousands more will, no doubt, be repeated. They serve to emphasize several important facts, namely, that this age group quite emphatically represents the helpless and exploratory children who will get into serious asphyxial situations and that, when inadequate or tardy precautionary measures are taken by adults in the name of safety, they too frequently result in a false sense of security. Most safety measures are designed to be absolute. However, when they are controlled by humans, many tend to become relative and accidents do occur. This fact has been proved too often to be ignored, and consequently what would seem to be the inevitable, especially in cases of asphyxiation in this age group, must be prepared for in advance. Time does not permit the calling

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of a rescue squad nor searching for a neighbor who knows "how." You are on the spot in more ways than one and what you know and do immediately will determine, to a large extent, what the ultimate result will be. Should help arrive, in the form of a rescue squad, their results will likewise depend to a large extent upon what you have done. Time lost through inactivity at the beginning cannot be regained at a later period. These facts have been reconfirmed just recently by interviews with some 50 well-informed practical operators in charge of well-equipped professional rescue squads.

After a general discussion of artificial respiration, both manual and mechanical, a number of questions were asked in reference to artificial respiration in infants and small children. The answers led to the following unanimous conclusions: 1. No safe and efficient standard method of manual artificial respiration is available. Such a method, if available, would have wide application almost daily. 2. More and more reliance is being placed on mechanical resuscitators. The results, however, are not generally favorable unless some manual effort has been made immediately prior to their arrival. 3. Mechanical resuscitators cannot be used effectively in the average case of submersion unless the patient has been rendered essentially dry by some manual method, and manual modifications currently in use are not generally effective. 4. One of the most difficult problems is to maintain an unobstructed airway without resorting to the use of a mechanical one (if available) with frequent use of the aspirator and interrupted resuscitation. 5. The arm lift–back pressure method has improved the results obtained with adults, but it is potentially dangerous or inefficient in this age group. 6. According to the records of these operators, asphyxial emergencies in this group are definitely on the increase, and this increase is due mainly to cases of submersion. 7. Present and proposed legislation requiring fenced in or covered private swimming pools is a step in the right direction, but you cannot legislate against human weaknesses and chances of error. 8. Finally, not only the operators but the general public must have some safe and efficient standard manual method available and be able to use it immediately before any improvement in asphyxial fatality rates in this age group may be expected or realized. It was also pointed out that, in order to develop public interest and participation in learning such a method, it could be introduced and made a part of the national civil defense program in respect to respiratory paralysis due to nerve gases. Generally, parents are more concerned about what they can do for their children than they are about their own safety.

SHORTCOMINGS IN PRESENT METHODS OF RESUSCITATION

I have mentioned serious shortcomings in present methods for this age group. Let us examine them in the order in which they appear and in the order of their importance. It has been stated previously that any practical and efficient method of manual or mechanical artificial respiration must provide not only artificial respiration but also artificial circulation, or at least enhance pulmonic circulation and venous return to the heart. This can best be accomplished by an active expiratory phase and an active inspiratory phase commonly referred to as a push-pull, rocking, or, in the case of mechanical resuscitators, alternating positive-negative action. However, before any of these methods may be effectively utilized, it is absolutely mandatory that an unobstructed and adequate airway be established and, I hasten to add, maintained. Many manual methods have been proposed; however, only those considered to be efficacious under practical circumstances and applicable to individuals in this age group will be discussed as to serious shortcomings in the different components comprising the resuscitative effort or technique.

Position.—There is little or no discussion necessary concerning position of the victim, since it is a universally accepted fact that a prone position is far superior to that of a supine position in cases of asphyxia in general. It is conducive to the expulsion of oral-nasal secretions and vomitus, and a moderately "head down" attitude of the body is likewise favorable toward gravitational postural drainage. Possibly the one important exception, as previously mentioned, would be the necessary use of the arm lift–chest pressure method (supine position) in cases of advanced pregnancy.

Airway.—One of the major problems, from a practical standpoint, has always been to obtain and maintain an unobstructed and efficient airway in all manual methods of artifieial respiration and in all age groups. All texts and manuals emphasize the importance of obtaining an adequate airway before any resuscitative effort is started, and the usual instruction reads, "Quickly sweep your fingers through his mouth to clear out froth and debris and bring his tongue forward." Should it be assumed that this froth, or more frequently, thick mucus, in cases of asphyxia from submersion in salt water, will dry up spontaneously, or that a shapeless mushy tongue will remain in a forward position? If this were the case it would be superfluous to add to the instructions, "Stick a pin or nail through the tongue to keep it in a forward position and occasionally remove any froth or mucus that has formed." In most cases, a pin or nail is about as available as a modern resuscitator. The important fact is that the instructions continue as: "Begin artificial respiration and continue it rhythmically and uninterruptedly until spontaneous breathing starts or the victim is pronounced dead." Experienced operators in the practical application of any form of manual artificial respiration will freely admit that this is frequently one of the most serious complications with which they are confronted, and the condition becomes increasingly worse as the state of apnea is prolonged. I am referring to victims who actually require artificial respiration under circumstances far removed from experimental control. I, as well as many others, have found it absolutely necessary not only to break rhythm but to actually interrupt the artificial respiratory effort on numerous occasions in order to maintain a clear and unobstructed airway. It would be useless to continue under compromising circumstances, regardless of a gross breach in technique. There have been many occasions when inexperienced personnel have continued manual artificial respiratory efforts in the presence of a partial or occasionally a completely obstructed airway unaware of its presence, through lack of knowledge of

the symptoms. The results can hardly be expected to be favorable.

Also, in those cases in which an approved mechanical resuscitator is immediately available, with an artificial airway and adequate aspiration, it frequently becomes necessary to repeatedly remove the mask and aspirate. The excellent report by Gordon and co-workers [4] states in part "In the strict sense of the word, manual artificial respiration refers to methods that can be executed by a single operator without the assistance of additional personnel, material, or equipment." [6] At the same time it should be noted that in another report Gordon, Fainer, and Ivy stated, "For the unequivocal comparison of the amount of pulmonary ventilation produced by the different methods, we kept the airway open by introducing and using a McGill endotracheal tube with an inflatable cuff. This yielded an air-tight fit, reliable results and an ideal airway." [7] While it is recognized that, since the major part of their study was concerned with the actual amount of pulmonary ventilation obtained by the various manual methods, the excellent comparative results would not appear to effect this major objective, since this ideal airway was used in all methods studied. Nevertheless one questions whether this, in the strict sense of the word and according to definition, was manual artificial respiration? There is no question about the procedure being indicated and necessary, not only to obtain the results but also, probably more significantly, to act as a safety factor for the volunteer subjects, in view of the means used to render them totally apneic. Certainly the intravenous administration of thiopental sodium and curare in itself presents certain possible inherent airway risks that must be guarded against by the introduction of an artificial or mechanical airway. Gordon and coworkers also mention that the tidal volumes with the push-pull methods may appear to be excessive.[8] A close examination of the spirometer tracings shown in their article, in respect to excursions above and below the base line, demonstrates quite clearly the presence of an excellent airway, since no evidence of even partial obstruction is revealed. It would, therefore, seem that what appeared to be excessive tidal volumes with the push-pull methods under study were, in no small part, the result of the use of the mechanical airway. In this respect the results obtained, in all probability, would not be equaled or even approximated in the practical application of these manual methods in actual cases of accidental asphyxia, especially when the etiological factor is one of submersion. The practical inference that I wish to draw from the preceding discussion is that, since an adequate and efficient airway is one of the first, as well as one of the most important, components of any method of artificial respiration, it must be recognized that what was an ideal and most efficient airway under controlled studies is seldom, if ever, met in actual cases of manual resuscitation. If the resuscitative effort is to be effective, however, an adequate airway in the manual methods must be obtained and maintained without artificial or mechanical means.

In infants and small children this problem from a practical point of view is more complicated than in adults. I believe that adults, in general, at some time or other during their life have been impressed with the fact that infants and small children are, under normal circumstances, generally wet. I refer to the cephalad end rather than the caudal, in keeping with the subject matter of this paper. Anyone who has been dribbled, bubbled, or drooled on is well aware of the fact that this age group either experiences a seemingly continuous form of oral hypersecretion, is unable to cope with normal secretions, or more probably suffers from a combination of both. Many explanations have been advanced for this condition, such as excessive salivary secretions, small buccal area, teething, or hypertrophied lymphoid tissue of Waldeyer's tonsillar ring. It would appear that this age group does not seem to possess the ability to inattentively cope with normal secretions in respect to the act of swallowing. Possibly the child needs something in its mouth to initiate this act, since when it is feeding from bottle or breast it does not appear to exhibit the difficulty to any great degree. I have observed a similar situation in adults, while attempting to relieve a simple ear block in naval aviators. The patient has been asked to close the nares by pinching the nose, close the mouth, and swallow. I have watched many of these patients make all sorts of frustrated attempts to complete the act of swallowing without success. Conversely, have them take a mouthful of water, hold it in the mouth, and repeat the preliminary procedure, and they perform the act of swallowing immediately with no effort. Whatever the explanation, the fact remains that infants and small children are unable to cope with oral secretions under normal circumstances, and this fact becomes a major complication when compounded with hypersecretions in cases of asphyxia, especially one of submersion. An adequate airway must not only be initially obtained but also be maintained throughout the resuscitative procedure. These patients should never be raised in the upright position after a resuscitative response, even though the gag and swallowing reflexes have returned. They should be kept in a slightly head-down position to permit postural drainage until complete recovery.

Pressures.—From what has already been said concerning the use of external pressures in the different methods of manual artificial respiration, especially concerning the difficulty of control with inherent risk of accidental injury, or overcautiousness with resulting inefficiency, it should be obvious that, if external pressures could be eliminated, the method would be much safer in this age group. Internal pressures utilizing the Eve rocking principle [9] are self-controlled, adequately efficient, and not dangerous. It should be noted that the Eve principle is referred to and not the Eve method,[10] which is strictly a mechanical one.

It should also be noted that dangerous pressures in this age group are not confined to those of the expira-

6. Gordon and others,[4] p. 1445.

7. Gordon, A. S.; Fainer, D. C., and Ivy, A. C.: Artificial Respiration: A New Method and a Comparative Study of Different Methods in Adults, report of the Council on Physical Medicine and Rehabilitation, J. A. M. A. **144**: 1457 (Dec. 23) 1950.

8. Gordon and others,[7] p. 1449.

9. Eve, F. C.: Actuation of Inert Diaphragm by Gravity Method, Lancet **2**: 995 (Nov. 5) 1932. Killick, E. M., and Eve, F. C.: Physiological Investigation of Rocking Method of Artificial Respiration, Lancet **2**: 740 (Sept. 30) 1933.

10. Eve, F. C.: Artificial Respiration Explained, Baltimore, Williams & Wilkins Company, 1946.

tory phase. The inspiratory effort, or arm lift phase of the Holger Nielsen method [11] could be just as dangerous, even in experienced hands. It is a well-known fact that the head of the humerus may be acidentally dislocated with very little unintentional pressure when an infant or small child is in a conscious state. Such an accidental dislocation is due mainly to the fact that infants and small children do not possess the inherent safety factor afforded a shoulder by well-developed muscles. In fact, in this age group there is little, if any, muscular development present. Such muscular development does not take place to any marked degree until a later date when, through general body activity and play, these muscles become strengthened and provide more stability to the shoulder girdle. When these facts are considered in a small child in a conscious state, it is not too difficult to imagine what the situation must be when such an individual is in a completely flaccid or unconscious state as a result of asphyxia. The so-called firm resistance that is met in adults in a similar state of flaccidity is barely perceptible, if present, prior to the point of accidental dislocation. Consequently, the margin of safety between adequate and efficient pulmonary ventilation and accidental dislocation bcomes a very narrow one. One could hardly recommend such a procedure as safe and efficient to a comparatively inexperienced general public.

NEED FOR ACCEPTED MANUAL METHOD

From the discussion in the preceding paragraphs and other complications that have been alluded to but not discussed in detail, it would appear that at present no safe, efficient, or completely acceptable manual method of artificial respiration for infants and small children is available for general recommendation to the public at large. If there is, it certainly has not been well publicized and is not known to experienced operators, and I have been unable to locate any publications in regard to its existence.

That a critical need for such a method exists is in evidence almost daily in our newspapers: "Baby drowns in bath while mother answers door bell," "Small child electrocuted while exploring open electric plug connection with hairpin," "Infant smothers in crib," "Child strangles in crib," "Baby boy drowns in unguarded private pool,"—all cases of asphyxia that appear day after day, not usually in big headlines but in small deadly ones. Such incidents as these add up to shocking totals. They are disasters that pass almost unnoticed by the general public; however, they strike deeply the parents and neighbors, especially those who realize that in many of these cases the means of survival could have rested within the framework of their own individual hands. Once more, let me repeat that this is no time to seek aid but rather the time to give it.

Personal interviews with members of rescue squads, police, fire officials, and beach patrol directors in representative large and small municipalities in the United States and Canada have served to emphasize such a need. Many of these groups freely admit that too much reliance is being placed on their immediate arrival at the scene and that little or nothing constructive has been accomplished toward a resuscitative effort by individuals on the scene, pending their arrival. Many of these groups are not very optimistic concerning this lost time that cannot be regained in most instances and is certainly not conducive to recovery. Once more, the longer the state of apnea exists prior to the start of some resuscitative effort, the worse the prognosis. Conversely, we might add that the shorter the time from established apnea to some resuscitative effort, even minimal in effectiveness, the better the prognosis. Another important factor disclosed during these interviews was an attempt on the part of individual members of different groups, in lieu of any recognized standard manual method that was felt safe and effective in this age group, to modify or improvise methods in which the underlying physiological principles had been established. Many of these methods were witnessed in demonstration, but only three (fig. 1 and 2) could be considered provisionally efficient or moderately safe. In figure 1*A*, not only is the position bad, as the infant could very well drown in its own fluids, but it is very doubtful if the volume of pulmonary ventilation would be adequate in cases of even

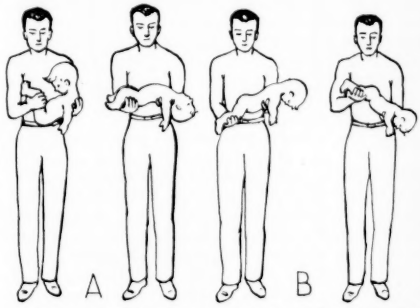

Fig. 1—*A*, jacknife maneuver with baby on back. *B*, rocking method with baby in prone position.

moderately prolonged apnea. Figure 1*B* represents a closer approach to safety and efficiency, since it utilizes the principle of the rocking method of Eve. The main objection would be the inability to obtain and maintain an adequate airway (both hands are occupied) and the inability to provide an effective volume of pulmonary ventilation, since the degree of the arc through which the infant may be rocked with any manner of safety (both hands occupied) is strictly limited. It is by far superior to figure 1*A* and for want of a better method could possibly be used with effectiveness in cases of apnea of very short duration. The ultimate prognosis would at best be guarded.

Figure 2 represents the best modification with one hand grasping the feet. A safety factor is introduced that permits a greater rocking arc with increased ventilation; however, no airway is provided and the head receives no direct support. Consequently, in the head-up position (inspiratory), the head has a tendency to tilt forward producing a partial block in the airway.

11. Nielsen, H.: Method of Resuscitation, Ugesk. læger **94**: 1201 (Dec. 15) 1932.

PROPOSED CRITERIA FOR NEW METHOD

What criteria of efficacy must an acceptable new method of manual artificial respiration meet in order for it to be recommended and approved by medical authorities and ultimately presented to the general public for practical application? The following criteria are

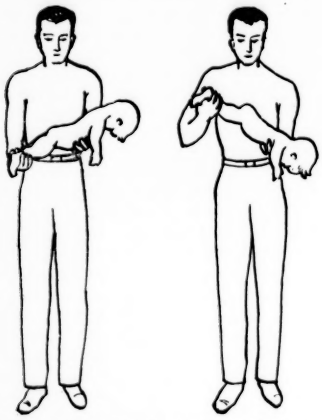

Fig. 2.—Rocking method with baby held by feet.

proposed in the order of relative importance to the practical application of such a method based on my rather extensive experience with actual cases of asphyxia due to many causes. Most of these cases were due to submersion and complications resulting therefrom. These probably represent some of the most difficult cases of asphyxia with which an operator is confronted. This situation, as has already been explained, appears more compounded in infants and small children than in adults. Consequently, such a proposal must provide for the best practical components of manual resuscitation possible. 1. The speed with which the method may be applied to the victim following such a catastrophe is of paramount importance. Immediately is the one word that seems to satisfy the first component. 2. The prone position is by far the most desirable one in the majority of cases of asphyxiation. 3. An unobstructed, adequate, and continuous airway is mandatory in all methods of artificial respiration if the method is to be effective. An adequate airway throughout the resuscitative effort must be obtained and maintained. 4. The method must be rhythmic and uninterrupted until spontaneous breathing starts or the victim is pronounced dead. 5. An adequate, preferably a maximal, volume of pulmonary ventilation must be produced. 6. The possibility of injury by the use of uncontrolled external pressures must be eliminated, preferably utilizing internal pressure such as those involved in the Eve principle. 7. The push-pull principle, which also produces essentially artificial circulation, or at least favors venous return to the heart, resulting in an adequate mean arterial oxygen saturation, should be used. 8. The procedure should be executed by a single operator without the assistance of additional personnel, material, or equipment. 9. The procedure should be easy to teach and simple to learn, and it should be one that may be performed accurately, efficiently, and safely by anyone. 10. It must not be unduly tiring to the operator over a reasonable period of time (probably 10 to 15 minutes) and should provide modifications resulting in change of position to lessen the chance of operational or positional fatigue to the operator.

A manual method of artificial respiration that would provide for these components as listed would seem to be one that could be proposed as safe and efficient. Such a method, no doubt, could be termed new, even in view of the fact that several well-established and proved principles will be incorporated into the technique. Whether or not it will be approved and accepted by medical authorities, professional groups, and the general public for practical application should depend mainly upon how well it provides for the critical components of manual artificial respiration for this age group listed above.

The birth and proposal of any new method of manual artificial respiration demands a name, preferably one that not only is descriptive of the basic position and maneuvers but indicates and is a constant reminder to all operators that one of the practical fundamental acts in initiating any method of artificial respiration is to begin with the expiratory phase. The logic of this action is quite clear when one considers the possibility and probability of obstructive material lying in the region of the tracheal opening ready to be aspirated with the first inspiratory effort, if not preceded by one of expiration to

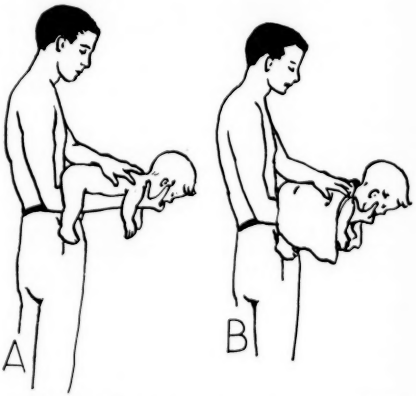

Fig. 3.—*A*, modified Mauriceau position, lateral view. *B*, same position with cover.

clear the area. In many texts and publications on manual artificial respiration the descriptive terms of different methods are referred to as arm lift–back pressure, hip lift–back pressure (Schafer–Emerson–Ivy), and arm lift–chest pressure.

I seriously object to this inconsistency in position of descriptive terms for two reasons. First, it is not only incompatible with the best resuscitative procedures but

also not consistent with descriptive techniques. The procedure should always begin with the expiratory phase and the descriptive term should so imply as, back pressure–arm lift or back pressure–hip lift. Secondly, it results in confusion in teaching since the lay person will invariably and instinctively practice in the order in which

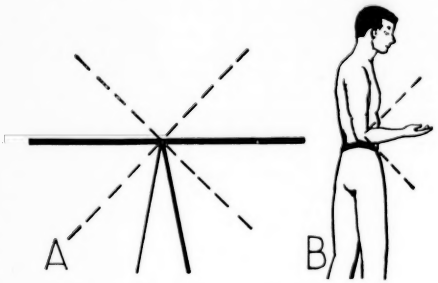

Fig. 4.—*A*, diagram of Eve method. *B*, Eve principle.

he repeats to himself and learns. It may be recalled that this teaching method was used to excellent advantage by instructors for the American National Red Cross in teaching the prone pressure method. The student was taught to repeat to himself "Out goes the bad air, in comes the good; out goes the bad air, in comes the good." While this procedure was primarily instituted in order to give him a sense of rhythm and timing, it likewise served to remind him that it was important to begin with the expiratory phase in order to avoid possible aspiration.

A review of the different manual methods of artificial respiration reveals that in the past it apparently was customary for the individual who devised and offered a new method or modification to associate his last name with the method followed by a suitable descriptive name. For example, we have the Silvester (arm lift–chest pressure); Schafer (prone pressure); Eve (rocking); Holger Nielsen (arm lift–back pressure) Schafer–Nielsen–Drinker (modification of Nielsen method); Emerson (hip lift); and Schafer–Emerson–Ivy (prone hip–chest method). It is presumed that this custom was initiated and continued for purposes of identification of each method or modification and to prevent confusion in the teaching of the different techniques. Whatever the reason, I will conform with the established precedent and continue the custom of the past.

Rickard Prone Tilting–Visceral Shift Method

There are two principles used in this new method, called the Rickard prone tilting–visceral shift method: first, the position of the subject during the Mauriceau breech extraction maneuver,[12] with appropriate modification to obtain and maintain a continuous digital airway and provide for extension of the lower jaw and lateral support to the head in order to maintain it in a midline position (fig. 3*A*). In this position, the subject may also be covered to preserve body temperature (fig. 3*B*). Second is the principle of the Eve method [10] (without the usual apparatus or device), used to eliminate the application of potentially dangerous external pressures (fig. 4). The descriptive title of this method indicates the position of the subject, the active expiratory and inspiratory phases, and the fact that safe pressures are supplied entirely by the shifting of the abdominal viscera.

POSITIONING OF SUBJECT

If the subject is found lying in the supine position (fig. 5*A*), the middle finger of the right hand, bent at the second joint to form a 90 degree angle, should be placed in the subject's mouth, over the tongue, in order to draw the tongue slightly forward and depress it into the floor of the mouth. The thumb and index finger and the ring and little finger are placed on either side of the lower jaw so as to extend it in a forward position and add lateral support and stability to the head, which is maintained in a midline position (fig. 6). The midline position of the head also aids in obtaining and maintaining a more direct and unhampered airway, in contrast to the usual positioning in other methods, where the head is turned to one side or the other, resulting in a torsion or twisting of approximately 90 degrees. Roll the subject over in a face-down (prone) position onto the right forearm with the arms and legs of the subject in a straddling and pendant position (fig. 3*A*). If the subject is found lying in a prone position, grasp his right thigh with the left hand, raising the body sufficiently to position the right hand and forearm as previously described and permit the subject to be lowered onto the right forearm in a prone and straddling position (fig. 5*B*).

The left hand is now placed (palm down) across the back with fingers spread on either side of the neck and hooking across the shoulders (fig. 3*A*). Such a positioning of the left hand not only adds to the security of the subject on the forearm but permits a greater angle of arc through which the subject may be tilted, with safety, in executing the basic maneuvers. It should be noted

Fig. 5.—*A*, positioning from supine position. *B*, positioning from prone position.

that the middle finger, not the index finger, is placed in the mouth (fig. 6). (Mauriceau's maneuver utilizes the index finger.) These positions of the operator's hands and fingers, as well as the position of the subject, are maintained throughout the entire resuscitative procedure.

POSITION OF OPERATOR

The operator should rise to a standing position with the subject draped across the forearm as described, keeping the forearm at right angles to the upper arm and parallel to the ground or floor (fig. 2*A*). The upper arm

12. Stander, H.: Text Book of Obstetrics: Designed for the Use of Students and Practitioners, 3rd revision, New York, D. Appleton-Century Company, Inc., 1945, pp. 1062-1063.

must be kept in close contact with the lateral chest wall, slightly anterior, in order to shift most of the subject's weight to the operator's shoulder girdle, thereby relieving the muscles of the upper arm from most of the so-called dead weight (fig. 7). It should be emphasized that these positioning maneuvers, both of the subject and the operator, while requiring considerable time to explain, actually are accomplished in a matter of seconds.

EXPIRATORY PHASE

Begin immediately and always with the expiratory phase (fig. 8*A*). Time is of prime importance. Do not delay for any secondary reasons such as moving the subject, loosening clothing, warming, or applying stimulants. Lower the forearm (extension) to a position of approximately 45 degrees, which will place the subject in a head-down attitude. The abdominal viscera will shift and push against the diaphragm in this position, forcing air out of the lungs. At the same time, expulsion and drainage of fluids and debris is accomplished not only by gravity but by the previously established and maintained airway.

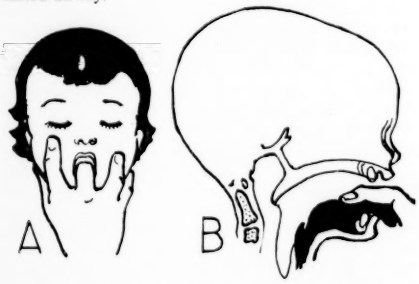

Fig. 6.—*A*, position showing showing digital airway. *B*, lateral view.

INSPIRATORY PHASE

At the completion of the expiratory maneuver, the subject will be raised to the inspiratory phase (fig. 8*B*), a head-up position of approximately 45 degrees, by lifting the forearm (contraction). The abdominal viscera will shift in the opposite direction from the previous one, releasing the pressure and causing an actual pull or tug on the diaphragm, due to the visceral ligamentous attachment. This maneuver will result in air being sucked into the lungs, completing the inspiratory phase and respiratory cycle.

RATE AND RHYTHM OF CYCLES

The rate of the tilting cycle should be between 8 and 12 times per minute through an arc of 45 degrees, head-down position, to that of 45 degrees, head-up position, in rhythmic and uninterrupted sequence, until spontaneous breathing starts or the victim is pronounced dead. It is highly recommended that the operator, in order to accomplish a reasonably accurate sense of timing and rhythm, repeat to himself the following phrases: "Out goes the bad air (expiratory phase), in comes the good air (inspiratory phase)" for a complete cycle rate of 12 times per minute; "Out goes the bad air and (expiratory phase) in comes the good air (inspiratory phase)" for a complete cycle rate of 8 times per minute. It should be noted that each expiratory phase (always the first maneuver) begins with the word "out" and that each inspiratory phase begins with the word "in." If this suggestion is followed and the count

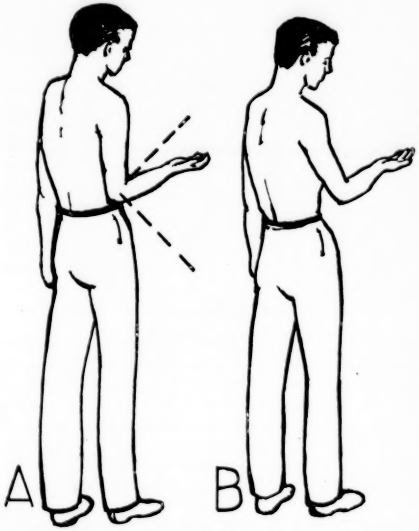

Fig. 7.—*A*, correct arm position with arm close to body. *B*, incorrect arm position with arm away from body.

not hurried, it will be found that the first example requires 5 seconds per cycle and results in a rate of 12 cycles or respirations per minute. The second example, by insertion of the word "and" in the expiratory phase,

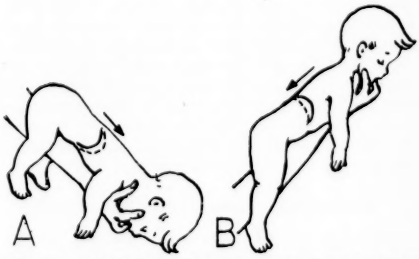

Fig. 8.—*A*, expiration-head-down position showing visceral shift against diaphragm. *B*, inspiration-head-up position showing visceral tug on diaphragm.

requires approximately seven and one-half seconds per cycle and results in a rate of eight cycles or respirations per minute.

It should be realized that timing and degrees of arc are more relative than actual in the practical application of artificial respiration; however, a reasonable attempt to simulate normal respiration must be made. The

average inexperienced operator has a great tendency to hurry these maneuvers unless some simple repeat-phase is used to give him a sense of rhythm and timing. In cases of asphyxia by submersion and other cases that are frequently complicated by excessive amounts of fluids, it would be advisable to use the eight times per minute cycle and limit the head-up position to a 30 degree arc until the victim has become essentially dry. At that time the rate should be increased to 12 times per minute and the head-up position to the full 45 degree arc. This precaution not only provides a slightly prolonged expiratory phase, during which more complete drainage of fluids takes place, but also lessens the chance of accidental aspiration. In fact, it has been reported, in studying these components, that a rate of 8 times per minute increased the volume of each cycle but not the minute volume as compared to 12 times per minute.[13]

MODIFICATIONS OF POSITIONS OF OPERATOR

After positioning the subject as previously described, the operator may, instead of rising to a standing position, kneel on the left knee, placing the right leg in a right-angle position with the thigh parallel to the ground. The operator's right elbow is then placed upon the right thigh sufficiently close to the knee to permit free action (45 degrees) in the downward tilt, and resuscitation is started immediately (fig. 9). Many asphyxial emergencies occur in places such as the home, private swimming pools, and other places where chairs, benches, tables, and other household and patio furnishings are immediately available. Under these circumstances of immediate availability of a suitable place to sit, the operator may even further conserve his energy by assuming positions as illustrated in figure 10 or 11. It should be noted in these diagrams (fig. 9, 10, and 11) that the two essential factors necessary for these modifications are: (*a*) the object be of sufficient height to enable the operator to function properly and (*b*) the thigh be kept at a close parallel with the ground and sufficiently above it to obtain the necessary 45 degree angle head-down tilt.

Fig. 9.—Modification to kneeling position.

All of these modifications may be used where possible to the operator's advantage and with no change in the basic resuscitative technique. The kneeling modification (fig. 9) is especially recommended as an alternate position with that of the standing position (fig. 3*A*), and the change may be accomplished without break in rate or rhythm. Resuscitation may be continued almost indefinitely by effecting this change, especially in the heavier children in this age group. The weight of the subject, as may be seen from the diagrams, is placed almost entirely upon the thigh and indirectly on the ground. The change in the operator's position also serves to eliminate any postural or positional fatigue at the shoulder that may occur with a heavy subject and an unusually prolonged resuscitative effort.

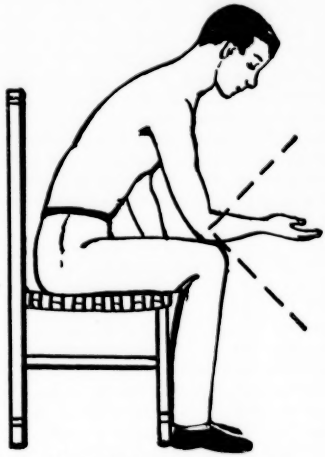

Fig. 10.—Modification to sitting position.

Fig. 11.—Modification to bent knee on low seat.

13. Gordon, A. S.; Fainer, D. C., and Ivy, A. C.: Artificial Respiration: A Comparative Study of Different Methods in Adults Including a New Method, in Special Report, Conference on Artificial Respiration, held at Medical Division, Army Chemical Center, Maryland, on 29-30 September 1950, (April) 1951, p. 73.

PRACTICAL USE OF DIGITAL AIRWAY

A rather important point in relation to the practical use of the digital airway should be explained. No provision has ever been made for such an airway in any method of manual artificial respiration in the past. Consequently, some misunderstandings or questions may be raised in the minds of those who have had limited experience with the practical application of resuscitation concerning predisposition to regurgitation and aspiration of stomach contents. It must be readily admitted that the possibility of accidental aspiration is present in all methods of artificial respiration, both manual and mechanical. The area in the immediate vicinity of the tracheal opening is never completely free of mucus and secretions in normal life. As a result we experience aspiration of small particles of food and fluid in a conscious state of being.

Certainly, then, this situation and possibility is not only present but actually compounded in a state of unconsciousness, where the swallowing reflex is completely abolished and hypersecretions and fluids are present. This condition is particularly true in cases of asphyxia by submersion. The introduction of a digital airway that is maintained throughout the entire resuscitative procedure would appear to greatly lessen the chances of such a condition occurring. In addition it will be recalled that the subject's head is maintained in a midline position with the lower jaw extended, thus providing a direct exit during the expiratory phase. Fluids are not retained in the buccal areas to be aspirated with each succeeding inspiratory phase, and the victim actually has a tendency to dry up more rapidly than in presently accepted methods. With these methods, which utilize the prone position with the head turned to one side or the other and the cheek resting on the hand, there is actually more chance of accidental aspiration, since the buccal area is not completely cleared of fluids and each succeeding expiratory pressure raises a little more fluid from the stomach. This fluid cannot be completely expelled from the mouth, even in a slightly head-down position of the victim, since the position of the head results in a torsion of the neck, an unextended lower jaw, and trapping of fluids. I feel that this situation will be improved by the introduction and provision of an adequate airway with maximal chance of a rapid clearance of fluids and with actually less chance of accidental aspiration.

PEDAGOGIC AND PERFORMANCE FACTORS

Assessment of the degree of difficulty in teaching, the accuracy of performance, and the degree of discomfort and exertion by prospective operators, in a practical sense, is essential. This presented quite a problem in the evaluation of this new method of artificial respiration. I felt that, since the method, as proposed, advocated the use of several components that were new or had new application, in comparison to those currently in use on adults, it was only proper that it be presented to medical groups first. Consequently, a large group of nonmedical personnel was purposely avoided in obtaining the assessment data of the pedagogic and performance factors in order to prevent predisclosure, with possible adverse results. In addition, it was realized that this information could not be obtained from actual practice on live and conscious subjects, even if available. The presence of the swallowing and gag reflexes would prohibit the application of the airway component, and it was felt that the position advantage (prone) of the Mauriceau maneuver as well as the advantage of the Eve principle utilizing internal pressures were too well known to require extensive evaluation.

A random selection of operators, with no previous instruction in this method, was made and the method explained and demonstrated, with the use of partially filled sandbags of varying weights including those of 7, 14, 21, and 30 lb. (3.2, 6.4, 9.5, and 13.6 kg.). Manikins were used to demonstrate the application and positioning of the middle finger to maintain the digital airway and the use of the remaining fingers to extend the lower jaw and add support to the head in a midline position. A stop watch was used to time the speed of application and to devise suitable repeat phrases in order to develop uninterrupted rhythm timing of 8 and 12 cycles per minute. The pedagogic information obtained was that after one period of instruction, all personnel, without exception, were able to repeatedly place the method in operation within an average period of six seconds, and no difficulty was experienced with any component or its execution. The general conclusion was that it was easy to learn.

Next, the performance factor was assessed by using sandbags representing the approximate weights and relative sizes of infants and small children ranging from one week of age (8 lb. [3,628.7 gm.], 21 in. [53 cm.]) to 2 years of age (30 lb. [13.6 kg.], 34 in. [91 cm.]). Note that the relative sizes as given represent the measurements from head to foot and, since the legs are straddled across the forearm, no difficulty was experienced in these representative groups. The length of the forearm of the average individual will easily accommodate this age group without any interference to the required range of angle at the operator's elbow joint. The operators performed the technique in a rhythmic and uninterrupted manner for a period lasting 10 minutes. The 10-minute period was felt to represent a reasonable one for manual artificial respiration; however, many of the operators continued for periods as long as 15 and 20 minutes with the lighter weights (8 to 16 lb.) and did not feel unduly tired. Under emergency conditions it was felt that these longer periods could be duplicated and even extended if necessary. There was one factor that was noticed by all operators. This condition was noticed in the use of the heavier bags (24 to 30 lb.) and was not one due to activity of the forearm but rather inactivity of the shoulder. It could be termed a positional or stability fatigue. Since most of the victim's weight is transmitted to the operator's shoulder girdle indirectly, it was noted that, as the 10-minute period approached the last few minutes, the operators, while holding the upper arm close to the body, attempted to move it slightly anterior to the lateral chest wall in order to gain support to the

shoulder by anchoring the elbow. The condition was described, not as a tiring one, but as an uncomfortable or crampy feeling in the shoulder muscles relieved by a slight position change that gave support to the elbow. With this evidence and experience in mind, I devised several modifications to the basic position of the operator that not only eliminated this situation and were quite applicable to the heavier children but could be used routinely by female or young operators of slight physical stature. They have been described and illustrated previously.

The results of the assessments were expressed in a unanimous opinion by the operators that the method was easy to learn and not tiring at all with the lighter weights and only moderately so with the heavier weights. They could continue under emergency conditions by simply shifting the position of the upper arm. The shifting does not interfere with the accuracy of the performance nor with the efficiency of the method; however, it can be avoided completely by using the previously described positional modifications.

COMMENT

The critical need for a practical, safe, and efficient method of manual artificial respiration in infants and small children has been substantiated by personal observations and interviews among groups of professional operators who perform 90 to 95% of the rescue work in the United States and Canada and probably throughout the world. This particular age group represents one in which the opportunity for accidental asphyxial emergencies is greater than in any other age group throughout the span of life. It is, likewise, a group in which the anatomic development and the physiological processes have not had sufficient time to develop any marked safety factor or reserve, as compared to the adult.

Consequently, whatever is to be accomplished in a resuscitative way must be prompt, safe, and efficient. These criteria can only be met by someone on the scene and in possession of a method based on sound medical recommendations. In a final analysis, the determination of the most efficacious method will not come solely from laboratory results. The groups who provide the practical application of all intelligently proposed and approved methods for the rescue of humans must give the final evaluation regarding these methods, as it pertains to human resuscitation.

SUMMARY AND CONCLUSIONS

The descriptive name, Rickard prone tilting–visceral shift, that has been assigned to a new method of manual artificial respiration for infants and small children indicates the position of the victim and that the expiratory phase is the initial one and the shifting viscera produce an active expiratory and inspiratory phase, or a push-pull method. The development was based on two sound and proved principles; namely, utilization of the position in the Mauriceau maneuver, with practical modifications and application of the principle of the Eve rocking method.

The method is strictly manual by definition in that it is executed by a single operator without the assistance of additional personnel, material, or equipment. A continuous digital airway is introduced for the first time in manual artificial respiration, and the head of the victim is placed and supported in the midline, eliminating the torsion that is present in other methods when the head is turned to one side or the other. External pressures that have proved dangerous in the past have been replaced by safe and effective internal pressures that are self-controlled—the push-pull action that has been proved most effective.

The method is simple to teach and easy to learn and does not require any great expenditure of effort or unusual degree of discomfort to the operator in order to perform accurately, safely, and efficiently for what has been determined to be a reasonable period of 10 to 15 minutes. Use of the recommended modifications, although not necessary, will alleviate any tendency to positional fatigue experienced by the operator. As mentioned before, the modifications are practical suggestions that may be utilized if circumstances permit.

The method was devised to be used in an age group ranging from 7 to 8 lb. (3,175.1 to 3,628.7 gm.) to a maximum of 28 lb. (12.7 kg.) in weight, which represents in age a small child from one week of age up to a maximum of 2 years of age. It will be recognized at once that many 2-year-olds have developed sufficiently in size, weight, and muscular support that the Holger Nielsen (arm lift–back pressure) method may be applied with a certain amount of caution.

From a practical point of view, it is felt that application of this method fulfills the criteria that have been proposed for an efficient, safe, and acceptable method of manual artificial respiration in infants and small children. It has been repeatedly emphasized and authenticated that proposed and enacted legislation to enforce safety factors will not ever result in absolute prevention. While it is a step in the right direction, it too frequently results in a false sense of security. The fact remains, as stated and recorded by those who respond to the majority of asphyxial emergencies, that these cases are on the increase. Most important of all is the well-established, practical assertion by these groups of professional operators that the element of time from the discovery of a case of apnea until an operator arrives on the scene is of paramount and critical importance to the success or failure of resuscitation.

This situation appears to be particularly true in children of the helpless and exploratory ages. The present lapse in activity must be replaced by active and intelligent resuscitative effort of an approved and effective nature if results are to be improved in the future. Certainly, if recovery is a possibility, immediate and effective resuscitation is the one and only single factor that will result in its accomplishment. Failure in this respect can be attributed only to lack of interest by society, since all members, with few exceptions, possess the fundamental requisites to accomplish this end and have them available for immediate use at all times—the hands.

FIFTY YEARS OF ORGANIZED ANESTHESIOLOGY

Albert M. Betcher, M.D., Benjamin J. Ciliberti, M.D., Paul M. Wood, M.D.
and
Lewis H. Wright, M.D., New York

The oldest society organized for physicians interested in anesthesiology in this country traces back to a group founded by Dr. A. F. Erdmann. He invited these physicians to a meeting at the Long Island College Hospital in Brooklyn, N. Y., on Oct. 6, 1905. Eight physicians responded that evening to his invitation to get together and form an anesthesiology society. Although there probably were other groups who had met before this date, this society, named the Long Island Society of Anesthetists, has been meeting formally and continuously, changing only its name, to the present day (fig. 1). On that memorable evening, plans were made for regular business and scientific sessions, and dues were set at one dollar per year. The records of this infant society are unfortunately incomplete for the next few years due to a fire in 1911 at the home of the secretary, in which all records were burned except for the original notebook in which the constitution was written. But, during these years, the society met regularly and conducted its scientific sessions on new anesthetic equipment and methods of administration of the agents then employed.

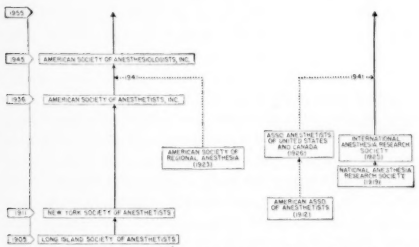

Fig. 1.—Historical development of American Society of Anesthesiologists and International Anesthesia Research Society.

In 1911, pressure was put on the Long Island Society of Anesthetists to move over to Manhattan. The founders had set the number of charter members at 50, and at this time they were still short of that figure. It was urged that many anesthetists outside Brooklyn would join because of the great interest in the scientific sessions. Thus, at the May 31 meeting, a committee was appointed to present a plan for a new constitution. In October of the same year, while Erdmann was president, the name was officially changed to the New York Society of Anesthetists. Dr. James T. Gwathmey was elected the first president at the second regular meeting of the New York Society of Anesthetists on Feb. 7, 1912. Dues were increased to $3 per annum, and the purpose of the society was defined as the advancement of the science and art of anesthesiology. The charter membership was now completed. Continued interest in the possibility of the organization's being national in scope led to more requests by physicians for membership. In fact, there were 103 physicians present at the May 12, 1912, meeting. It was at this meeting that the executive committee was instructed to consult with the American Medical Association about forming a section on anesthesiology within the latter organization.

In the meantime, other organizations in the field of anesthesiology were appearing in this country. Although an organization called the American Association of Anesthetists had had a first formal meeting during the American Medical Association convention in Minneapolis in June 18, 1913, its activities did not become important until one of the foremost pioneers in American anesthesiology, Francis McMechan, took over the reins. In addition, in 1915, he organized the Interstate Association of Anesthetists of Ohio and Kentucky. By 1916, as organization secretary of the American Association of Anesthetists, he directed the society's policy. McMechan enlarged it so that, by 1926, it was changed to the Associated Anesthetists of the United States and Canada. At the same time, the Interstate Association was changed to the Midwestern Association of Anesthetists. McMechan also helped to found the Canadian Society of Anesthetists, which later became the section on anesthesiology of the Canadian Medical Association. He also aided in the formation of the Pacific Coast Association of Anesthetists, the Eastern Society of Anesthetists, and the Southern Association of Anesthetists. All these sectional societies later became regional societies of the Associated Anesthetists of the United States and Canada.

Still the organizational enthusiast, McMechan, in 1919, founded the National Anesthesia Research Society in Cleveland. This society was promoted by E. I. McKesson, a manufacturer of anesthesia appliances, and was meant to include manufacturers of anesthetic drugs and apparatus, who, as nonphysicians, were ineligible for membership in the above organizations. In fact, there were laymen on the governing board of the National Anesthesia Research Society. In 1925, it became exclusively professional. In this year, the name was changed to the International Anesthesia Research Society to include anesthetists from all over the world. As a result of visits McMechan made to other countries, the board of governors inaugurated the International College of Anesthetists. They planned to certify specialists in anesthesia by 1936. The American Society of Regional Anesthesia was started by a group of anesthetists and neurosurgeons in 1923. Its original intent was to honor Gaston Labat, who had developed the art

Read before the Section on Anesthesiology at the 104th Annual Meeting of the American Medical Association, Atlantic City, June 8, 1955.

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of local infiltration and nerve block techniques. Although it was a small organization, its existence later proved of inestimable value.

Meanwhile, the New York Society of Anesthetists regularly conducted its programs of business and scientific sessions. Prominent speakers, including nonanesthetists contributed to those sessions. Candidates for membership appeared from the neighboring states of New Jersey, Pennsylvania, Connecticut, Massachusetts, and Maryland. By 1915, there were 70 members. An "associate membership" for dentists who showed special qualifications in anesthesiology also helped to increase the membership. The year 1917 saw members of the New York Society of Anesthetists offering their services as individuals to serve in the armed forces as specialists in anesthesiology. Drs. Booth, Buchanan, Guedel, Gwathmey, and Munkittrick were among those who served overseas, organized training centers, and contributed to resuscitative measures for patients exposed to poison gas. At the meeting of Nov. 8, 1917, Major George W. Crile, who had just returned from the war front, addressed the membership. At the conclusion of the war, the New York society attempted to gather the fruits of the gains made during the war effort. Efforts were restarted in 1921 to obtain a section on anesthesiology in the American Medical Association; however, letters sent to the Secretary and responsible committees of the American Medical Association met with no success for the next 10 years.

STEPS TOWARD A. M. A. RECOGNITION

In 1933-1934 the Advisory Board for Medical Specialities was set up. This board did agree to meet with an anesthesiology committee, but only representatives from the International Anesthesia Research Society and the Associated Anesthetists of the United States and Canada were invited. Although there was representation in the New York Society of Anesthetists of physicians from throughout the country, its "local" name precluded an invitation. However, since only organizations that had sections in the American Medical Association could be considered, this invitation was meaningless. The New York Society of Anesthetists then directed its efforts to raise its own standards by granting certification by the society. Late in 1934, they empowered their committee on certification to print application blanks for the granting of fellowships in anesthesiology. Their plan was to hold a written, oral, and practical examination in accordance with the principles of the Advisory Board for Medical Specialties. This plan eventually would be submitted for approval to the advisory board.

Meanwhile, candidates from states beyond the eastern Atlantic seaboard area were applying for membership in the New York society. These included anesthetists from Ohio, Texas, Georgia, Minnesota, Oklahoma, and Nevada. These efforts, literally due to the one-man crusade of the secretary-treasurer, Paul M. Wood, renewed hope of recognition by the American Medical Association of the specialty of anesthesiology. By the time of the Jan. 15, 1936, meeting, several members had received the certificates, designating them as "Fellows in Anesthesiology." Among those recommended for fellowship were Joseph Lumbard and Moses Krakow of New York, Ansel Caine of New Orleans, Charles McCuskey of Los Angeles, Ralph Waters of Madison, Wis., and Sidney Wiggin of Boston. There was further evidence of the national character of the New York society in the recommendation of Paul M. Wood for a revision of the constitution to include a new permanent committee, the public relations committee.

All these events, coming with such rapidity after 1934, stimulated the executive committee of the New York society to such a fervor that they polled their members by mail for their reaction to changing the name of the society. At the following meeting on Feb. 13, 1936, with excitement evident in the hall, the secretary-treasurer explained the reason for the proposed change in name. The motivating purpose was to make this society a national anesthesiology society, in name as well as in fact. Nothing would be changed except to replace the words "New York" with "American" througout the constitution. He reviewed the unwillingness of the American Medical Association and the Advisory Board for Medical Specialties to accept any organization whose title might indicate a local society. It followed, therefore, that, to assume the responsibilities of a national organization, it must have a name that was national in character. Of the 124 replies received to the questionnaire, 120 had been in favor of and 4 had been opposed to the change. One of those opposed had been its founder, A. F. Erdmann, who had feared being swallowed up by a new organization, as occurred in 1911, when the Long Island Society had become the New York Society of Anesthetists. However, as he voiced these fears aloud, he concluded, "I am overwhelmed by the recognition of the changes which will take place and by the fact of the necessity for making these changes."

The first business taken up after changing the name to the American Society of Anesthetists was the appointment of John Lundy to represent the group at a meeting of the American Medical Association and of the Advisory Board for Medical Specialties. However, neither group showed any enthusiasm for prompt approval. Then a possible solution appeared as a result of the group's previous efforts to elevate its status. Ralph Waters, one of the early advocates of uniting the basic medical sciences with clinical anesthesiology, had instituted a five year residency program in anesthesia at the University of Wisconsin. E. R. Schmidt, professor of surgery at the same university, was influenced by the anesthesia program of Waters and was very anxious to see the anesthetist keep pace with the surgeon in professional recognition. At the time the American Society of Anesthetists changed its name, Schmidt was in the East to amalgamate the various surgical societies in order to obtain a board of surgery. He intimated to the anesthesiology society that, if the American Medical Association refused to recognize any additional specialties, he would ask the surgical group to certify anesthetists as an associate board to the American Board of Surgery. As Buchanan reported this meeting to the society membership, "It is a long hard fight, but we eventually, I think, will get our place."

To obtain recognition as a specialty by the American Board of Surgery, it was necessary to have representation of some of the national societies of the specialty. Invitations were extended, therefore, to the International Anesthesia Research Society, the Associated Anesthetists of the United States and Canada, and the American Society of Regional Anesthesia, as well as to the American Society of Anesthetists. The first two societies decided against joining in this plan of certification; however, the small organization called the American Society of Regional Anesthesia, almost extinct because of its lack of dues-paying membership, allied itself with the American Society of Anesthetists. It retained a spark long enough to justify the prepared statement sent to the Advisory Board for Medical Specialties. The statement declared that anesthesiology was a specialty and as such should be recognized and that an American board of anesthesia was being formed and had representatives from the national organizations.

On Dec. 10, 1936, the old society with the new name was officially incorporated as the American Society of Anesthetists, Incorporated. A new constitution and bylaws were adopted, making dentists no longer eligible for membership. The offices of secretary and treasurer were separated. The governing and advisory body was to be a board of directors of 18 members. The constitution likewise provided a committee on fellowship, consisting of nine members. Annual dues for the 487 members were now increased to $5. The members were urged to attend the American Medical Association meeting at Atlantic City, N. J., in June, 1937, to register in the Section on Surgery and to add the word "anesthesia" in parentheses. In October, 1936, three representatives from the Section on Surgery of the American Medical Association met with representatives of the two national anesthesiology societies that had requested a certification board. It was recommended that the anesthetists' representatives to the board be appointed from the Section on Surgery. The first representatives were to be fellows of the American Society of Anesthetists. With this recommendation, the Section on Surgery accepted the responsibility of sponsoring anesthesiology as a related section. Subsequently, at the meeting in Chicago to set up the American Board of Surgery, the Advisory Board of Medical Specialties recommended that the anesthesiology societies apply to the American Board of Surgery to join on the basis of an affiliate board.

The plans for affiliation of the American Board of Anesthesiology with the American Board of Surgery were completed on June 2, 1937. The plan was approved by the American Society of Anesthetists and the American Society of Regional Anesthesia. It conformed in all respects to the examining boards of other medical specialties. The members and associate members of the examining board were selected by a committee representing the above two anesthesia societies and the Section on Surgery of the American Medical Association. In February, 1938, the Advisory Board for Medical Specialties approved the affiliation. Official recognition of physicians competent to practice and teach anesthesiology as a specialty was now an accomplished fact.

Now, in 1939, the American Society of Anesthetists turned its efforts again to establish a section on anesthesiology in the American Medical Association. California, Connecticut, and Indiana had already established sections on anesthesiology in their state medical societies. There was an awareness that the American Medical Association was more friendly to organized medical anesthesiology. A further inquiry led to a proposed meeting with the A. M. A. Council on Scientific Assembly for November, 1939. In advance of this meeting, the group was further heartened by the receipt of a letter from James E. Paullin, Chairman of the Council of Scientific Assembly. It read in part: "Of course, I cannot speak for the entire council, but I do believe that the establishment of a Section of Anesthesiology would be for the good of the American Medical Association and I think it would help your specialty very much—a subject in which I wish to say I am enthusiastically interested."

The Council on Scientific Assembly at the above meeting agreed to recommend to the House of Delegates that a section on anesthesiology be established. In June, 1940, at the Annual Meeting of the American Medical Association, the House of Delegates voted unanimously to establish the Section on Anesthesiology in the American Medical Association. Anesthesiology was now a recognized specialty. In the meantime, rumors were heard that the six affiliate surgical boards of the American Board of Surgery were in favor of separating and becoming separate individual boards. Since anesthesiology had gained its own section, this was now possible. In 1941, the Advisory Board for Medical Specialties approved the American Board of Anesthesiology as a separate major board, with the unanimous consent of all participating societies and boards.

ATTAINMENT OF OTHER GOALS

There was still another objective in the minds of the original founders—the formation of a journal devoted to anesthesia. In 1914, at McMechan's persuasion, the *American Journal of Surgery* established a quarterly supplement of anesthesia and analgesia in that publication. It became the official organ for the existing anesthesiology societies and was continued for about 10 years. McMechan, himself, after founding the National Anesthesia Research Society, provided this organization with a monthly bulletin, which was enlarged in 1922 to the present official organ, *Current Researches in Anesthesia and Analgesia*. This was the first medical journal in the United States devoted entirely to anesthesiology. In 1937, the journal club of the section on anesthesia of the Mayo Clinic started a publication, *Anesthesia Abstracts*. It was under the editorial direction of John Lundy and is still published today.

The New York Society of Anesthetists in 1935 began to mimeograph reports of its business and scientific sessions. Copies were sent to the membership and provided a means of disseminating the latest advances in anesthesiology. In 1938, McCarthy of Toledo, Ohio, chairman of the committee on public relations of the American Society of Anesthetists, started a monthly newslet-

ter. It included reports on anesthesiology from recognized journals. In October of the same year, a committee was appointed to obtain information regarding a journal representing the American Society of Anesthetists. Early in 1940, an editorial board, policy committee, and consulting editors were appointed. The new journal was named *Anesthesiology*. The first issue appeared in July, 1940, and was sent to 568 members and 300 additional subscribers. It has been published bimonthly since and today has a combined circulation of 7,231 copies per issue.

Still another purpose of organized anesthesiology was to expand educational facilities in medical schools and hospitals. In 1935, the committee on education of the New York Society of Anesthetists sent a questionnaire to 87 medical schools in the United States and Canada about the teaching of anesthesiology in their curriculum. Of the 75 schools that replied, 58 listed anesthesiology instruction as a separate subject given by a physician, 5 listed anesthesiology instruction given by nurses, 5 listed anesthesiology instruction as part of surgery or pharmacology, and 7 gave no instruction in anesthesiology at all. The society then published a resolution that the departments of anesthesiology in medical schools and hospitals should be in charge of a certified specialist in anesthesiology who should have direct supervision of the teaching of this subject to undergraduates and graduates. Albany Medical College, the University of Georgia, Stanford University, and the University of Vermont soon thereafter appointed certified specialists in anesthesiology to head these departments.

In 1938, the educational committee of the society set up a placement bureau for physicians desiring resident appointments in approved residency programs. It also announced short refresher courses in postgraduate instruction and listed hospital and medical school appointments in anesthesiology. The number of approved hospital residencies rose from 10 in 1933 to 49 in 1945. At the listing of approved hospital residencies in the Sept. 25, 1954, issue of THE JOURNAL of the American Medical Association, the number had risen to 188. The latest questionnaire sent to medical schools in 1954 showed that only 11 had autonomous departments in anesthesiology. The remaining departments are divisions or sections of surgery. All the chiefs of anesthesiology hold professorial rank, but of varying status (fig. 2).

The final objective of the founders' group was to bring the medical anesthetist to equality with the other specialists in medicine. From 1915 to 1934 the New York Society of Anesthetists, at various times, tried to get the public health law of the state of New York amended to include the administration of anesthetics in the practice of medicine. In 1939, when the anesthesia society was national in name as well as fact, it suggested that the problems of amending state laws for the practice of medicine and of working on the various phases of economic or legal practices, including hospital insurance plans, could best be handled on a local level. A number of state sections of the American Society of Anesthetists were thus set up for this purpose. In addition, it was planned to hold scientific meetings.

LATER DEVELOPMENTS

During World War II, there was a curtailment of activity, since many of the members were in the armed forces. The Articles of War of the Army and Navy Regulations had been revised to recognize the specialty of anesthesiology. Standard colors for the gas cylinders were achieved in 1942. Work on fire and explosion hazards was limited by the war needs. The major manufacturers agreed to standardize equipment. In April, 1945, the society changed its name to the American Society of Anesthesiologists, Inc. It also established an annual Distinguished Service award. As the end of the war neared, there were 739 members in the armed forces. A large number had become interested in anesthesiology while in service. They were concerned particularly in the plans of the society to increase the residency programs in anesthesiology. A further impetus to attract these men into the specialty was the declaration by the House of Delegates of the American Medical Association that the administration of anesthetics was within the practice of medicine. The final objective had been achieved.

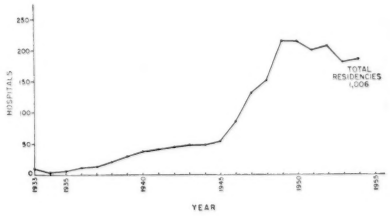

Fig. 2.—Rise in approved hospital residency programs in anesthesiology.

In 1946, the society had 2,147 members. Returning veterans found residencies in 63 training centers. Temporary approval of the residency programs of hospitals was granted to accommodate about 700 men who had been separated from the service. The first fellowship in anesthesiology given by the National Research Council was awarded in September of that year. The Morton Centennial and the Ether Centenary were celebrated in Boston in October under the aegis of the American Society of Anesthesiologists. By 1947, the realization that the society had expanded into an organization of over 2,400 members prompted the appointment of a permanent executive secretary as coordinator for activities. A new constitution and bylaws were adopted, providing for government of the society by the executive committee, a board of directors representing geographical regions of the United States and Canada, and a house of delegates composed of representatives from each state, the territories of the United States, and the provinces of the Dominion of Canada. The first annual meeting in which the house of delegates met was the St. Louis meeting in November, 1948. It heralded the coming-of-age of the society. A speaker and vice-speaker were added in 1953.

The new constitution also provided for component societies on state, territorial, and provincial levels. Each state society patterned its constitution after that of the parent society and, with the receipt of a charter, was allotted representation in the house of delegates. The formation of these component societies has provided a means of handling problems on a local level and of solving matters peculiar to a particular region. One of the important revisions in the new constitution was the establishment of the American College of Anesthesiologists. It was to be under the control of the society and replaced the committee on fellowship. This committee, set up in 1936 to certify anesthesiologists as fellows, became virtually inactive after the establishment of the American Board of Anesthesiology. It had been intended to continue designating as fellows in anesthesiology those anesthetists who could not qualify for the American Board of Anesthesiology and yet deserved some type of certification. When the American College of Anesthesiologists was set up in 1947, the members of the dormant fellowship committee became its board of

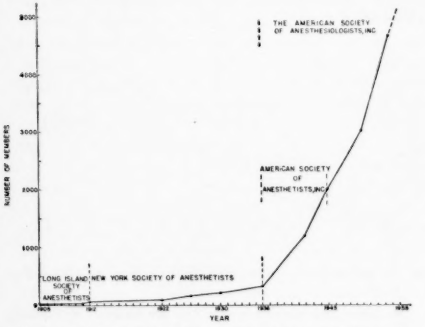
THE AMERICAN SOCIETY OF ANESTHESIOLOGISTS, INC
AMERICAN SOCIETY OF ANESTHETISTS, INC
LONG ISLAND SOCIETY OF ANESTHETISTS
NEW YORK SOCIETY OF ANESTHETISTS
NUMBER OF MEMBERS
YEAR

Fig. 3.—Growth in membership of American Society of Anesthesiologists.

governors. All anesthesiologists holding certificates previously issued by the committee automatically became fellows of the American College. From 250 fellows in 1947, the membership has steadily increased until there are now 1,335 fellows certified by the American College of Anesthesiologists. It has encouraged physicians to enter the specialty, enabled them to attain a high degree of competent safety, and provided a category of recognition for those who are qualified but do not limit their practice to the specialty of anesthesiology. In addition, the American Society of Anesthesiologists compiles a list of short postgraduate courses of instruction for physicians interested in part-time practice of anesthesiology as well as refresher courses at its annual meetings. The former list, from 110 centers of instruction, is sent each year to the American Academy of General Practice. General practitioners who enroll for these approved courses are given credit by the academy.

The library-museum of the society, officially opened in 1937, has gradually added to its material until it now has available more than 800 exhibit pieces, 4,000 reprints, and 1,600 books. At the direction of the house of delegates at the 1949 annual meeting, a nonprofit organization, called the Wood Library-Museum of Anesthesiology, was formed. It is the official repository for the archives and equipment pertaining to anesthesiology of the American Society of Anesthesiologists and receives a yearly grant from the society.

PRESENT STATUS

Today we have an organization that has grown from a membership of 9 in 1905 (fig. 3) to a membership of 4,714, the Section on Anesthesiology in the American Medical Association, the American Board of Anesthesiology, the American College of Anesthesiologists, a library-museum, a journal of anesthesiology, and training standards in the medical schools and hospitals to elevate the status of anesthesiology and increase the measures of safety for the patient. The functions of the society are reflected in the set-up of its committees and subcommittees, which number more than 29 standing and special committees. Other special committees are appointed as the need for a new activity or as a problem arises. After 50 years of striving to achieve the goals of the founders, namely, to elevate the status of the physician-anesthesiologist and to safeguard the patient during surgery, have we achieved the maximum result? What is the future of organized anesthesiology? Perhaps we can find the answer in the president's address at the 1954 annual meeting of the American Society of Anesthesiologists in Cincinnati. He predicted that the membership of the society would double in the next 10 years, due to the increasing demand for anesthesiologists and the continued expansion of the nation's medical schools; that it would be necessary to install a board of trustees of the American Society of Anesthesiologists; and, finally, the most important, that the economic and professional status of the anesthesiologist would be established in the next decade, in a respect similar to that of any other physician in the clinical practice of medicine. Furthermore, just as the obstetrician has replaced the midwife, the anesthesiologist will replace the technician of anesthesiology within the next generation.

1435 Lexington Ave. (28) (Dr. Betcher).

Tricuspid Stenosis.—Recent reports of surgical treatment of tricuspid stenosis emphasize a need for an accurate method of diagnosing this lesion, which is difficult to recognize clinically, since it is usually overshadowed by mitral stenosis which invariably accompanies it. Although there are clinical signs suggestive of tricuspid disease, such as pigmentation of the skin, peripheral cyanosis, abnormal jugular venous pulsations, expansile pulsation of the liver, ascites in the absence of pulmonary congestion, murmurs in the tricuspid area, enlargement of the heart to the right, and abnormal P waves in the electrocardiogram, it is still difficult, even with the evidence provided by these signs, to make a confident diagnosis of tricuspid stenosis. However, Wood and Chesterman and Whitaker have described a means of diagnosing tricuspid stenosis from an abnormal blood pressure gradient between right auricle and ventricle. Recently, blood pressures similar to those described by these authors have been recorded in three patients who were found subsequently, at operation or autopsy examination, to have severe tricuspid stenosis, thus confirming that an abnormal blood pressure gradient across the tricuspid valve is a valuable sign of tricuspid stenosis.—Whitaker, William, M.D., M.R.C.P., The Diagnosis of Tricuspid Stenosis, *American Heart Journal*, August, 1955.

ESTIMATION OF TOTAL CIRCULATING SODIUM

Carroll M. Leevy, M.D.
and
Francis J. Donovan, M.D., Jersey City, N. J.

Studies of total circulating hemoglobin and protein [1] suggest that a similar quantitation of plasma sodium might be helpful in patients with sodium imbalances. This is a preliminary report of plasma volume and serum sodium determined simultaneously in patients with clinical evidence of water and electrolyte disturbances. These investigations indicate the desirability of knowing the state of the plasma volume as well as concentration of sodium for optimum diagnostic and therapeutic perspective in patients with suspected alterations of circulating sodium.

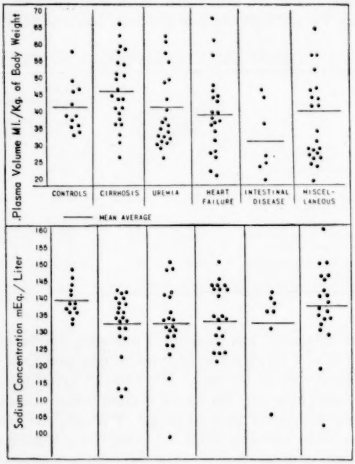

Fig. 1.—Plasma volume (top) and serum sodium concentration (bottom) studies on 13 control patients and 92 patients with body sodium abnormalities.

MATERIALS AND METHODS

Studies were performed on 13 normal subjects and 92 patients with body sodium abnormalities. Fluid and electrolyte disturbances were due to cirrhosis of the liver in 22 patients; heart failure in 21 patients; renal insufficiency in 21 patients; systemic disease with dehydration, fluid accumulation, or acid-base imbalance in 21 patients; and intestinal disease in 7 patients. Plasma volume was determined with standardized Evans blue, T-1824, by use of a modification of the method of Gregersen.[1] Plasma concentration of Evans blue was measured with an Evelyn spectrophotometer in specimens obtained without stasis 10 minutes after injection of the dye. The serum sodium level was determined with the Janke flame photometer by the indirect method. The total circulating sodium value was obtained by multiplying sodium concentration in milliequivalents per liter by plasma volume in liters.

OBSERVATIONS

Plasma volume ranged from 32 to 50 ml. per kilogram of body weight; serum sodium concentration varied from 134 to 148 mEq. per liter; and total circulating sodium ranged from 4.5 to 8.0 mEq. per kilogram of body weight in normal subjects. There was no specific pattern of plasma volume or serum sodium concentration characteristic of the disease states studied (table 1).

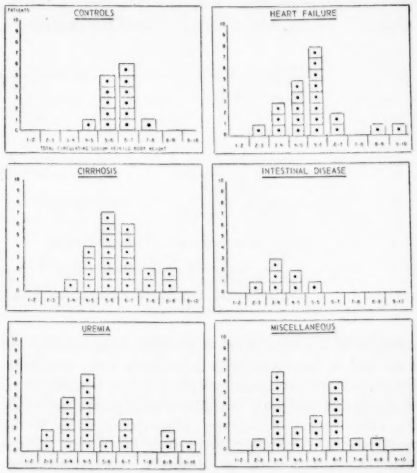

Fig. 2.—Average total circulating sodium in 13 control patients, 22 patients with cirrhosis, 21 with uremia, 21 with heart failure, 7 with intestinal disease, and 21 with miscellaneous systemic disease.

The plasma volume (fig. 1, top), serum sodium concentration (fig. 1, bottom), and average total circulating sodium (fig. 2) varied considerably. Symptoms were usually correlated with circulating sodium. Marked decrease in total circulating sodium was associated with hypotension, oliguria, and azotemia. These symptoms were rarely present with alterations in concentration of serum sodium or plasma volume if total circulating sodium was normal. Estimation of circulating sodium was found to be of practical help in the diagnosis and treatment of salt depletion, salt or water intoxication, and dehydration.

From the Department of Medicine, Jersey City Medical Center. Dr. Leevy is now a lieutenant commander in the United States Naval Reserve at St. Albans, Long Island, N. Y. Dr. Donovan is now in Boston.

Miss Mary L. Nemshick gave technical assistance in this study.

1. Gregersen, M. I.: Blood Volume, Ann. Rev. Physiol. **13**: 397, 1951.

Simultaneous study of plasma volume and serum sodium concentration is valuable in deciding whether decreased serum sodium concentration is principally due to body salt depletion, shift of sodium into cells in response to potassium depletion, or primary water retention. This is an important decision in an acutely ill person such as the "waterlogged" nephritic patient, the patient with cirrhosis of the liver in hepatic coma, or the cardiac patient after operation. The total circulating sodium is usually low in uncomplicated salt depletion in contrast to a normal level in sodium redistribution and a normal or increased level in primary water retention. Estimated circulating sodium gives a base line for repair of hyponatremia and permits objective evaluation of the effectiveness of therapy. Hypertonic saline is the treatment of choice in patients with low serum sodium levels due to salt depletion [2] (table 2, case 1); however, it is contraindicated in other causes of hyponatremia. Failure to differentiate hyponatremia due to salt depletion and hemodilution may contribute to the high mortality reported in the low-salt syndrome.[3] Treatment of decreased serum sodium concentration, which occurs with negative potassium and nitrogen balance, consists of correcting the etiological mechanism and replacing deficient potassium and protein.[4] Fluid restriction corrects hyponatremia due to primary water retention (table 2, case 2).

TABLE 1.—*Average Values of Simultaneous Determination of Plasma Volume and Serum Sodium*

	Plasma Volume, Ml./Kg.	Serum Sodium Concentration, mEq./Liter/Kg.	Total Circulating Sodium, mEq./Kg.
Normal subjects	41.5 ± 5.2	139.1 ± 0.3	6.0 ± 0.7
Congestive heart failure	39.3 ± 9.4	138.3 ± 6.1	5.2 ± 1.2
Hepatic cirrhosis	45.2 ± 7.9	132.1 ± 6.3	6.0 ± 1.1
Uremia	39.9 ± 9.1	132.6 ± 7.9	5.1 ± 1.4
Intestinal disease	31.1 ± 9.0	132.9 ± 8.5	4.1 ± 0.9
Miscellaneous	37.6 ± 10.7	137.9 ± 8.4	5.2 ± 1.4

Estimation of total circulating sodium permits recognition of salt depletion, although the concentration of serum sodium remains normal. Uncomplicated loss of body salt is rarely accompanied by changes in serum sodium concentration. This is due to activity of osmoceptors that maintain normal concentration.[5] Hyponatremia is noted in patients with salt depletion when hemodilution occurs in response to the body's effort to maintain an adequate plasma volume.[6] A normal serum sodium concentration may mislead the clinician. Better insight is provided by study of plasma volume in addition to serum sodium concentration. We have found it desirable to determine the total circulating sodium repeatedly in patients with fluid retention refractory to therapy. This is illustrated by a patient with heart failure treated with the rice and fruit diet and daily mercurial diuretics. She developed anorexia, hypotension, oliguria, and an elevated nonprotein nitrogen level during the course of therapy. The low-salt syndrome was suspected; however, her serum sodium concentration remained within the normal range. The total circulating sodium was reduced from 7.7 mEq. to 3.9 mEq. per kilogram of body weight. The circulating sodium estimation provides a guide for treating salt depletion when serum sodium concentration remains normal (table 2, case 3). It has also been valuable as a method of determining the need for sodium bicarbonate or lactate in metabolic acidosis. These salts are contraindicated in renal insufficiency or diabetic coma if the circulating sodium level is normal or increased. Given under these circumstances, they do not improve the acidotic state and may induce further electrolyte imbalance and precipitate salt intoxication (table 2, case 4). Alkali may be lifesaving where there is a low serum pH accompanied by a decrease in circulating sodium.[7]

Study of total circulating sodium has facilitated the differentiation of hypernatremia due to dehydration [8] from the elevated serum sodium level seen in salt intoxication and from the physiological elevation of serum sodium level occasionally noted in central nervous system and endocrine disorders. The circulating sodium level is normal in dehydration, whereas it is increased in other causes of hypernatremia. This distinction is

TABLE 2.—*Data Illustrating Value of Simultaneous*

Case No.	Disease State	Treatment Given	Clinical Results	Laboratory Results: Plasma Volume, Ml./Kg. of Body Weight B *	Plasma Volume, Ml./Kg. of Body Weight A †	Serum Sodium, mEq./Liter B	Serum Sodium, mEq./Liter A
1	Laennec's cirrhosis with low-salt syndrome and hepatic coma	Hypertonic saline	Hepatic coma disappeared	32.2	42.3	118.8	141.8
2	Congestive heart failure with fluid retention refractory to sodium restriction and diuretics	Water restriction	Fluid mobilized and hyponatremia controlled	66.0	56.4	127.6	138.0
3	Heat exhaustion with peripheral vascular collapse	Isotonic saline	Disappearance of symptoms and signs of salt depletion	29.1	42.7	141.7	137.9
4	Renal insufficiency and acidosis due to chronic pyelonephritis	Molar sodium lactate	Production of hyperelectrolytemia and pulmonary edema	56.2	85.1	142.2	141.0

* B—Before therapy. † A—After therapy.

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7. Kety, S. S.; Polis, B. D.; Nadler, C. S., and Schmidt, C. F.: The Blood Flow and Oxygen Consumption of the Human Brain in Diabetic Acidosis and Coma, J. Clin. Invest. **27**: 500, 1948.

8. Welt, L. G., and others: Role of the Central Nervous System in Metabolism of Electrolytes and Water, A. M. A. Arch. Int. Med. **90**: 355 (Sept.) 1952.

helpful when an elevated serum sodium level occurs during the course of parenterally given fluid therapy or in association with other electrolyte disturbances.

COMMENT

It has been shown that there is no correlation between total exchangeable sodium and serum levels [9] and that a variety of factors influence body sodium economy. New methods of study have reemphasized the necessity for concern with abnormalities of both extracellular and intracellular electrolytes and stress the danger of dealing with one compartment without considering exchanges. Ideally it would be helpful to know the sodium content of the interstitial area and body cells as well as the plasma. It is now possible to obtain such information by combining results of volume assays and isotopic dilution studies. Further refinement of available techniques may provide a simple and accurate means to serially quantitate all body electrolytes.

It is agreed that no single laboratory test is as helpful as general clinical appraisal in recognition and treatment of sodium imbalances. Estimation of total circulating sodium provides a practical addition to current methods of study. Quantitative study of urinary sodium has been employed to evaluate the state of body sodium and interpret serum sodium alterations.[10] Fluctuations of adrenal reserve and renal function often independently alter urine sodium and limit usefulness of this type of study in patients requiring emergency therapy.

The reliability of either Evans blue or iodinated human serum albumin methods for study of plasma volume [11] and the availability of serum sodium by flame photometry make estimation of total serum sodium a practical procedure. Constant cognizance must be had of technical limitations and errors inherent in the procedures as performed. Serial determinations are more helpful, as they provide insight into long-range adjustments. Repeated use of Evans blue was accompanied by an untoward reaction in two patients in this series. These patients developed an anaphylactoid reaction that subsided spontaneously.

The clinician must be aware of disturbances of protein, water, and other electrolytes in evaluating total circulating sodium. After demonstrating an abnormality in circulating sodium, the decision as to what treatment, if any, is desirable depends upon the causative mechanism and the general metabolic state.

SUMMARY

Estimation of total circulating sodium by simultaneously determining serum sodium and plasma volume revealed a value of 6.0 mEq. ±0.7 per kilogram of body weight in normal subjects. Specific disease processes are not associated with a characteristic pattern. Values range from a low of 3.0 mEq. per kilogram in salt depletion to a high of 12.4 mEq. per kilogram in salt intoxication. The total circulating sodium estimation may permit differentiation of hyponatremia due to salt depletion and primary water retention when one of these mechanisms is principally responsible for a decrease in concentration of serum sodium. It facilitates recognition of plasma sodium deficits with normal serum concentration of this ion. This type of study has improved therapeutic perspective in patients requiring prolonged treatment for fluid and electrolyte disturbances. Quantitation of circulating sodium appears to be a valuable adjunct to history, physical examination, and other fluid and electrolyte measurements in diagnosis and treatment of serum sodium disturbances. Constant cognizance of its limitations is essential to proper use in clinical medicine.

Determination of Plasma Volume and Serum Sodium

Laboratory Results													
Total Circulating Sodium, mEq./Kg.		Total Circulating Sodium, mEq.		Potassium Concentration, mEq./Liter		Chloride Concentration, mEq./Liter		Hematocrit, %		Protein Level, mEq.		24 Hr. Urine Sodium, mEq.	
B	A	B	A	B	A	B	A	B	A	B	A	B	A
3.7	6.0	178.2	289.0	5.0	5.0	94.4	103	42	41	16.5	16.5	25	60
8.7	7.7	791.1	710.4	4.0	4.1	100	101	37.4	37.5	12.4	13.1	150	156
4.0	5.8	255	372	4.7	4.4	102.9	103.0	44	43	16.0	16.0	4.3	71.3
8.0	12.4	511.9	797.3	4.4	4.5	107.9	109.8	24	23	15.1	13.7	..	..

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Reaction of Patient to Chronic Disease.—A patient enters a chronic illness as [he would] . . . a foreign land. He can no longer orient himself by accustomed landmarks; he has given up his own routines of living; and in so far as his usual symbols of communication take on new meanings and new references, he must even learn a new language. The reactions of patients with tuberculosis have been given considerable study. It has been recognized that they are in a sense uprooted people, isolated from their past and current life environments, not only by their infection and by the nature of their sanitarium experience, but as much by their own sense of difference from those with whom they have lived in intimate association. They may have reactions of sensitivity and defensiveness; they may become alert to rejection, fearful of their dependent needs, and angry with the unsympathetic world they project as an image on the screen of their preceptions.—J. V. Coleman, M.D., Attitudes of Professional Personnel in the Treatment of the Tuberculosis Patient, *American Journal of Public Health*, July, 1955.

CLINICAL RESULTS OF SELECTIVE LEUKOTOMY BASED ON INTRACEREBRAL ELECTROGRAPHY

Magnus C. Petersen, M.D., Henry W. Dodge Jr., M.D., Carl W. Sem-Jacobsen, M.D., Jorge A. Lazarte, M.D.
and
Colin B. Holman, M.D., Rochester, Minn.

Since Feb. 27, 1940, a total of 503 mentally ill patients have undergone prefrontal leukotomy at the Rochester (Minn.) State Hospital. The open method of Lyerly [1] has been used exclusively. The early operations were graded 4 on the scale devised by Love.[2] As much as possible of the white matter was cut in the plane of the coronal suture. Undesirable after-effects, such as inertia, confusion, and untidiness, always were in evidence after the operation. Most of the patients tended to become obese, and in many some masking of the facies developed. In order to prevent or to minimize these unpleasant sequelae, the trend has been to cut less extensively.[3] In all cases, the cut has been made in the plane of the coronal suture. Therefore, the variations have been in the extent and in the location of the cut in this plane.

STUDY OF ELECTRICAL POTENTIALS

In 1949 a study of the electrical potentials encountered in the depth of the frontal lobe in man was commenced.[4] The recordings were made in the operating room on patients undergoing prefrontal leukotomy. Disadvantages resulting from time limitations, from changes in potentials caused by surgical trauma, from the introduction of a rather bulky electrode, and from anesthetic agents soon became evident. Many of the difficulties were overcome by changes in procedure made possible by replacing the electrodes then in use with flexible electrodes. These could be implanted and left in position for long periods of time before the leukotomy was performed.[5] Thus, the pattern, properties, and distribution of electrical rhythms encountered in the depth of the human brain could be studied in the laboratory under controlled conditions.[6] In this manner electrical potentials in the frontal lobes of 73 patients have been studied through 2,294 recording tips. In the plane of the coronal suture, waves of 2 to 4 cps were invariably recorded from a circumscribed area in the ventromedian quadrant of the frontal lobe. The size of this area, in most cases, varied from 1 to 2 cm. in diameter. The location was fairly constant but varied slightly from patient to patient. It should be emphasized that these wave forms, which are considered abnormal by conventional surface electroencephalographic standards, were always encountered in depth but were not seen in recordings from the scalp.

The finding in the ventromedian quadrant of the frontal lobe of a circumscribed area having a specific electrical activity induced us to limit the cutting to this region. Since July 14, 1953, this selective prefrontal leukotomy has been performed on 63 mentally ill patients. Fifteen of them were male and 48 were female. They ranged in age from 16 to 72 years. Three were below 20 years of age and 47 were between 20 and 49 years of age, while 13 were 50 years of age or older; the average age was 38.1 years. The duration of the mental illness varied from 1.5 to 36 years, the average being 9.4 years. These patients had been hospitalized continuously for periods of time varying from three months to 35 years, the average being 5.5 years.

Condition of Patients by Diagnosis

Diagnosis	Total	S. A.*	M. I.	S. I.	N. I.	Died
Involutional	4	2	1	..	..	1
Schizoaffective	7	2	4	..	1	..
Schizophrenia, hebephrenic	5	2	2	..	..	1
Schizophrenia, catatonic	17	2	10	4	..	1
Schizophrenia, paranoid	24	6	18	..	..	..
Mental deficiency	3	..	2	1	..	..
Organic	3	..	..	3	..	..
Total	63	14	37	8	1	3

* S. A. = social adjustment; M. I. = much improved; S. I. = slightly improved; N. I. = not improved.

CLINICAL RESULTS

The clinical results as of Nov. 12, 1954, are summarized by diagnoses in the table. The evaluations were made from personal observations, from reports submitted by relatives of the patients, or from both. By "social adjustment" is meant that the patient has been dismissed from the hospital and has resumed his or her place in society. The patients classified as "much improved" may be either in or out of the hospital. If they are out of the hospital, they are still in need of guidance and some supervision. If they remain in the hospital, they require but little supervision, and usually they are good workers. By "slightly improved" is meant that the patient is more pleasant, less disturbed, and in better contact with reality than he was before the leukotomy. The term "not improved" is self-explanatory.

From the Mayo Foundation, the Rochester State Hospital (Drs. Petersen, Sem-Jacobsen, and Lazarte), and the Mayo Clinic (Drs. Dodge and Holman).

Read before the Eighth Clinical Meeting of the American Medical Association, Miami, Fla., Dec. 2, 1954.

The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

The studies in intracerebral electrography have been supported in part by a research grant from the Minnesota Department of Public Welfare.

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As shown in the table, 14 (22.2%) have made satisfactory social adjustment and 37 (58.7%) are much improved. Thus, 51 (80.9%) can at this time be classified under the heading of good results. Nine persons, so far, have shown little or no improvement. One of them is mentally deficient and possibly epileptic, one suffers from congenital athetosis and psychosis, and two have psychosis with hereditary chronic progressive chorea with mental deterioration (Huntington's chorea). At this time, 16 are out of the hospital. Three very disturbed patients died.

REPORT OF CASES

CASE 1.—A divorced woman, 38 years old, was first hospitalized for mental illness in 1945. Her main complaints were that people in some mysterious manner were harming her, causing her eyes to burn, and giving her headaches. She improved under electrotonic treatment but did not fully recover. She was again hospitalized in 1951 and 1952. On both occasions she improved in response to electrotonic treatment. Insulin treatment also was given in 1952. The improvement was short-lasting, however, and the complaints gradually became more pronounced, necessitating further hospitalization in March, 1953. The patient was admitted to the Rochester State Hospital on April 6, 1953. At that time she complained that people in some way were harming her through the electrical wires in any building where she happened to be. This caused her to have headaches and a severe burning pain in the eyes. She insisted that the FBI be notified, since she had previously reported the matter to that agency. She continuously kept both eyes covered with black cloth, even though the ophthalmologist assured her that there was nothing organically wrong with them. Between May 20, 1953, and July 1 of that year the patient had 15 electrotonic treatments. Mentally she improved, but she promptly relapsed when the intervals between treatments were lengthened. For this reason a selective prefrontal leukotomy was performed on July 14, 1953. Intracerebral electrographic studies were made before the operation was performed. On the basis of information derived from these studies it was decided to limit the cutting to the lower medial quadrants. She responded readily and was dismissed from the hospital as recovered on Aug. 17, 1953. On Aug. 28 she resumed her former position of secretary in a business establishment.

CASE 2.—In 1945 a 31-year-old married woman began to have spells during which she would stare into space, cry out loudly, and complain that people were spying on her. She was admitted to a hospital and given electrotonic treatments. She improved temporarily, but further hospitalization and treatment became necessary in 1946, in 1947, and again in 1948. The response to treatment was essentially the same in each instance. In December, 1948, the patient became very disturbed, destructive, and violent. On one occasion she struck her husband with a bottle while she was riding with him in the family car. On another occasion she grabbed the steering wheel of the car when they were driving and at the same time tried to bite her husband, who was at the wheel. The patient was admitted to the Rochester State Hospital on Jan. 7, 1949. Mentally she was confused, and there was much blocking. She responded to electrotonic treatment but did not fully recover. She was home on two occasions but in each instance was returned to the hospital after a few months in essentially the same mental condition described on her first admission. A prefrontal leukotomy of the selective type was performed on Sept. 8, 1953. Preceding the operation intracerebral electrographic studies were made. As a result of these studies, it was decided to cut the medial half of the left frontal lobe and the lower medial quadrant of the right. The patient responded well to the operation and was dismissed from the hospital as recovered on Jan. 23, 1954. She is working as a saleslady and has made a good social adjustment in spite of an unsatisfactory home situation.

CASE 3.—A single girl, 19 years of age, was admitted to the Rochester State Hospital on June 11, 1953. She was born prematurely and was said to have always been sensitive, nervous, and withdrawn. As a child she had frequent temper tantrums and had the habit of nail-biting. She repeated the first grade in school but completed the 12th grade in 1952. The onset of the mental illness was insidious. In December, 1952, the symptoms became more pronounced. The patient showed poor judgment in that she spent her money foolishly, would throw good clothing away, and would let herself be picked up by strangers. On admission to the hospital the patient was slow and preoccupied. When spoken to, she would hide her face in her hands and arms; she would not answer questions unless she was coaxed. Between June 17, 1953, and Nov. 4 of that year she received 26 electrotonic treatments. She gained a great deal in weight and improved much mentally. The improvement was not sustained. Soon the patient again became preoccupied and would laugh in a silly and inappropriate manner. A selective prefrontal leukotomy was performed on March 23, 1954. On the basis of information gained from intracerebral electrographic studies made before the leukotomy, it was decided to limit the cut to the lower medial quadrants. There was steady improvement after the operation, and she was dismissed on June 15, 1954, as much improved. Her social adjustment at the time of writing is good.

COMMENT

Observation of a larger number of patients over longer periods of time is necessary before a final evaluation can be made of this selective leukotomy. It can be stated, however, that so far the clinical results are better and the undesirable after-effects are fewer than they were after the more extensive types of leukotomy.

1520 E. Center St. (Dr. Petersen).

CLINICAL NOTES

EVALUATION OF A RAPID SERUM AMYLASE TEST

Michel Gilbert, M.D., Rochester, N. Y.

The purpose of this paper is to report our experience at the Strong Memorial Hospital with the rapid serum amylase test described by Fishman and Doubilet.[1]

METHOD

The amylase activity is estimated in Somogyi units by incubating a small amount of serum with a minute quantity of starch at 40 C (104 F) for five minutes. The residual starch, if any, is measured by the color changes produced by the addition of an iodine reagent. The test was found suitable for emergency clinical conditions, since the only equipment needed was a constant temperature water bath, a centrifuge, small test tubes, pipets, and three dropping bottles. The reagents, described in the original article, were simple to prepare and needed few precautions to maintain in suitable condition.

During the period of January to July, 1954, this test was employed in our surgical emergency ward in all cases of acute upper and midabdominal distress of doubtful etiology. The remaining serum was rechecked later by the Somogyi method. In the absence of correlation of the results, the Somogyi test was repeated in order to rule out an error in the latter method.

From the Department of Surgery, University of Rochester, Strong Memorial Hospital. Dr. Gilbert is now at the University Hospitals, Cleveland.

1. Fishman, L., and Doubilet, H.: A Rapid Serum Amylase Test, J. A. M. A. **157**: 908 (March 12) 1955.

RESULTS

A total of 56 emergency tests were performed; however, 6 of these were not checked by the Somogyi method and thus had to be discarded from the series. Of the remaining 50 results, 3 did not correlate with the Somogyi method, an error of 6%. Of the 47 patients whose serum amylase levels were found to be correct, the range was as follows (see table): 4 patients (8.5%) had serum amylase levels greater than 500 mg. per 100 cc., 5 patients (10.5%) had serum amylase levels between 350 and 500 mg. per 100 cc. Thus, 9 patients (19%) out of the 47 had a definite elevation of their serum amylase. Eight patients (17%) had a serum amylase level between 200 and 350 mg. per 100 cc., and 30 patients (64%) had a normal serum amylase level (0 to 200 mg. per 100 cc.).

COMMENT

Pancreatitis, either primary or secondary to other pathology (e. g., posterior penetrating ulcer), is often difficult to diagnose clinically unless a serum amylase test is done during the acute phase. The results on the 47 patients with acute upper or midabdominal pain of unknown etiology seen in our emergency ward showed that 9 patients (19%) had a definitely elevated serum amylase. These nine patients were given a diagnosis of acute pancreatitis and were treated by active nonoperative measures such as nasogastric suction, parasympatholytic agents, and infusions. Further tests such as gastrointestinal and gallbladder series were performed later to rule out the possibility of pancreatitis being secondary to other pathology. Thus, a little less than one out of five patients seen in our emergency ward with upper or midabdominal distress of doubtful etiology had pancreatic involvement.

Range of Serum Amylase Levels (in Somogyi Units) in Forty-Seven Patients with Acute Upper or Midabdominal Pain of Unknown Etiology

Amylase Range	Patients No.	Patients %
Elevated		
> 500 mg. per 100 cc.	4	8.5
350 to 500 mg. per 100 cc.	5	10.5
Doubtful range		
200 to 350 mg. per 100 cc.	8	17
Normal range		
0 to 200 mg. per 100 cc.	30	64

The test developed by Fishman and Doubilet was found to have a 94% accuracy and did not require any expensive or intricate equipment or trained personnel. Determination of the amylase level required only five minutes after the blood was clotted. Although only the range (e. g., 0 to 200, 200 to 350, 350 to 500, 500 to 700, and greater than 700 mg. per 100 cc.) and not the exact amylase content was given, this sufficed for emergency use. A more exact amylase concentration could be determined later with Somogyi method. Another advantage of this test was the small amount of serum needed (e. g., 0.1 cc. and 0.05 cc.). For example, the amylase content of even a few drops of fluid obtained by paracentesis could be easily determined. The color and end-points were found to be sharp and their interpretation easily made (e. g., blue to green, 0 to 200 mg. per 100 cc.; light green or amber, 200 to 350 mg. per 100 cc.; yellow, 350 mg. per 100 cc. or higher). If a yellow color was obtained with the use of 0.1 cc. serum, then another tube was set up with only 0.05 cc. serum and the results interpreted as follows: blue to green, 350 to 500 mg. per 100 cc.; orange to amber, 500 to 700 mg. per 100 cc.; yellow, 700 mg. per 100 cc.; or higher. The only difficulty we encountered was to remember that the starch solution had to be made up every three weeks and kept refrigerated when not in use. It was found that two of our three errors were due to the use of a starch solution older than three weeks. Since that time, by using a starch solution no older than three weeks, 24 consecutive serum amylase determinations have been made without error as determined by comparisons with the Somogyi method. It was also found necessary to change the iodine reagent every four months in order to have sharp color end-points.

SUMMARY

The rapid serum amylase test described by Fishman and Doubilet was found to be of value as an emergency procedure in the differential diagnosis of acute upper abdominal conditions and has been adopted at our hospital for this use.

2065 Adelbert Rd.

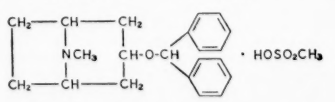
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

Monographs and supplemental statements on drugs that appear in this column have been authorized by the Council for publication and inclusion in New and Nonofficial Remedies. They are based upon the evaluation of available scientific data and reports of investigations.

R. T. STORMONT, M.D., *Secretary.*

Benztropine Methanesulfonate.—$C_{21}H_{25}NO.CH_4O_3S$. —M.W. 403.52.—3-Diphenylmethoxytropane methanesulfonate. — Tropane benzohydryl ether methanesulfonate.—The structural formula of benztropine methanesulfonate may be represented as follows:



Actions and Uses.—Benztropine methanesulfonate, a parasympatholytic agent that comprises chemical features of both atropine and certain antihistiminic drugs, exhibits anticholinergic, antihistaminic, and local anesthetic properties. Its anticholinergic effect is useful in the symptomatic treatment of all forms of paralysis agitans. The therapeutic significance of its antihistaminic and local anesthetic actions in that disease or its over-all

usefulness for other conditions has not been established. The action of benztropine methanesulfonate is prolonged; its anticholinergic effect is approximately equivalent to that of atropine sulfate; its antihistaminic activity is similar to that of pyrilamine maleate. Benztropine may be associated with anticholinergic-like side-reactions as well as the characteristic sedative and other side-effects of the antihistaminic drugs. Benztropine methanesulfonate does not produce central stimulation.

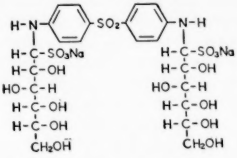
In paralysis agitans, benztropine methanesulfonate is chiefly effective for the relief of tremor and rigidity. It also may ameliorate other troublesome symptoms such as sialorrhea, drooling, mask-like facies, oculogyric crises, and pain secondary to cramping and muscle spasm. It may be employed alone or in conjunction with certain other drugs of established value in paralysis agitans, depending upon its effectiveness in individual patients. Aged patients who do not tolerate cerebral-exciting agents may respond to benztropine methanesulfonate.

Therapeutic doses of benztropine methanesulfonate may cause such anticholinergic-like side-effects as dryness of the mouth, blurred vision, nausea, and nervousness. Unless these effects are severe or are accompanied by vomiting or difficulty in swallowing or speaking, they usually can be disregarded or the dosage reduced slightly. In excessive doses for a given patient, the drug may cause weakness and inability to move particular muscle groups, which require adjustment in dosage. Difficulty in urination may be encountered occasionally, and the possibility of producing or aggravating glaucoma resulting from the mydriatic effect of the drug should be borne in mind. In the event of severe reactions such as mental confusion, excitement, or vomiting, the drug should be withdrawn temporarily and then resumed at a lower dosage level. Patients exhibiting a sedative side-effect, which may be associated with the accompanying antihistaminic action, should not be permitted to operate machinery or appliances requiring alert attention.

Dosage.—Benztropine methanesulfonate is administered orally. The usual dosage in paralysis agitans is 1 to 2 mg. daily, with a range of 0.5 to 6 mg. Patients should be started on a single daily dose of 0.5 to 1 mg. with increments of 0.5 mg. every few days until the optimal tolerated dosage is reached. The increments can be added as a separate 0.5 mg. dose so that doses of 0.5 mg., or multiples thereof, one to four times daily may be administered. Younger patients with post-encephalitic paralysis agitans may tolerate larger initial doses and, for maintenance therapy, may require 2 mg. two or three times daily. Older patients may be controlled by 1 mg. twice daily. Some patients may receive the greatest benefit with a single 2 mg. dose at bedtime, which is often sufficient to control symptoms for 24 hours; a single total daily dose administered at another time also may be effective for some patients. As with other therapy in paralysis agitans, the approach should be one of individual adjustment of dosage to obtain maximal symptomatic improvement with a minimum of undesired effects. When the drug is given to replace or supplement other drugs, the change should be gradual, with the dosage of the previous medication being reduced as the dosage for benztropine is increased.

Sharp & Dohme, Division of Merck & Co., Inc., cooperated by furnishing scientific data to aid in the evaluation of benztropine methanesulfonate.

Glucosulfone Sodium.—$C_{24}H_{34}N_2Na_2O_{18}S_3$.—M.W. 780.70. — *p,p'*-Diaminodiphenylsulfone-N,N'-di-(dextrose sodium sulfonate).—Glucosulfone sodium is available only in a mixture containing about 88.5% of anhydrous *p,p'*-diaminodiphenylsulfone-N,N'-di-(dextrose sodium sulfonate) and about 11.5% of dextrose. The structural formula of the active component may be represented as follows:



Actions and Uses.—Glucosulfone sodium is a chemotherapeutic agent effective against Mycobacterium. It is tolerated far better parenterally than orally, possibly because of liberation of the parent compound, *p,p'*-diaminodiphenylsulfone, by action of gastric acid.

The drug is effective in the treatment of leprosy. Against tuberculosis the results have been less dramatic, although beneficial effects have been reported. Streptomycin is much more effective in tuberculosis than is glucosulfone sodium, but, when the two are given together, development of resistance to streptomycin is delayed; hence in tuberculosis glucosulfone sodium is used principally as an adjunct to streptomycin therapy.

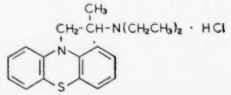
The most important untoward reaction to parenteral administration of glucosulfone sodium is the development of a hemolytic anemia. This usually corrects itself after discontinuance of the drug. Other toxic effects include nausea, vomiting, cyanosis, rashes, and mental confusion. These reactions may occur in about 10% of patients.

Dosage.—In the treatment of leprosy, the intravenous dose is 2 to 5 gm. It is administered daily for six consecutive days, omitted on the seventh day, and administered daily for the next six days. Treatment is interrupted for one week at the conclusion of each two week period. This schedule should be maintained for many months, the precise duration depending on the patient's response. In the treatment of tuberculosis, glucosulfone sodium may be used according to the same dosage schedule in conjunction with the usual course of streptomycin therapy.

Patients receiving glucosulfone sodium for prolonged periods should be under constant supervision. Frequent estimations of hemoglobin should be made and the drug stopped if any signs of anemia appear.

Parke, Davis & Company cooperated by furnishing scientific data to aid in the evaluation of glucosulfone sodium.

Ethopropazine Hydrochloride.—$C_{19}H_{24}N_2S.HCl$.—M.W. 348.93.—10-(2-Diethylaminopropyl)phenothiazine hydrochloride.—The structural formula of ethopropazine hydrochloride may be represented as follows:



Actions and Uses.—Ethopropazine hydrochloride, a phenothiazine derivative, is a parasympatholytic agent that exhibits a ganglionic blocking action comparable to that of nicotine but that produces a sufficient depression of the central nervous system to block the convulsant activity characteristic of nicotine. Intense and prolonged mydriasis is produced by parenteral injection in experimental animals. The drug also antagonizes certain acetylcholine effects such as bradycardia, hyperperistalsis, and salivation but, unlike atropine, does not inhibit the hypotensive effects of acetylcholine. Except at high dosage levels, it has only a minor effect on blood pressure, and its adrenolytic activity is somewhat weak and variable. Small doses stimulate respiration, but larger doses depress respiration. The drug also exhibits some antihistamine activity.

Ethopropazine hydrochloride is useful in the symptomatic treatment of parkinsonism, especially for controlling rigidity. It also exerts a favorable influence upon spasm, tremor, sialorrhea, and oculogyric crises and festination in that disease and may be employed in conjunction with other appropriate atropine-like drugs when these are indicated to supplement the action of ethopropazine, such as in refractory oculogyric crises. The role of its antihistaminic action in parkinsonism has not been established.

Ethopropazine hydrochloride commonly produces side-effects, but these are rarely severe. High dosage may cause temporary hypotension. With therapeutic doses drowsiness is the most frequent side-effect and dizziness also may occur. As dosage is increased, mouth dryness, blurring of vision, lassitude, sense of heaviness in the limbs, and, less commonly, epigastric discomfort also may appear. Because of its mydriatic action, ethopropazine theoretically should not be used in patients with glaucoma. Administration of the drug over long periods has not been followed by any blood dyscrasias or other signs of chronic toxicity.

Dosage.—Ethopropazine hydrochloride is administered orally. Optimal effective dosage is determined by individual response and may change with progression of the disease. Patients with symptoms of mild to moderate severity frequently respond to a daily dosage of 0.1 to 0.2 gm., preferably administered in divided doses to provide a smooth, sustained effect of the drug. Severe symptoms may require gradual increase in the daily dosage to 0.5 or 0.6 gm. Daily dosage as high as 1 gm. has been employed without ill-effects, but it is seldom necessary to exceed a total of 0.7 gm. daily. Therapy is usually initiated with a dose of 10 mg. four times daily. This is increased 10 mg. per dose every two or three days until a dose level of 50 mg. four times daily is reached at the end of the second week of therapy. Further increments may be added as necessary so as to reach an optimal level within three weeks of therapy. In some patients a fifth dose at bedtime may be desirable or the morning dose may be larger than the subsequent doses for the day. When used to supplement or supplant other medication, the drug is added to the existing regimen by administering initial doses and gradual increments as stated previously for two weeks; then it is continued while the original medication is gradually reduced. It is then stabilized at a lower level or is eventually discontinued. Complete transition usually requires a period of about six weeks; replacement therapy should not be substituted suddenly.

With the occurrence of distressing side-effects, lowering of dosage may become necessary, but those effects encountered during initial stages of therapy usually disappear with continued medication. Unless uncomfortable side-effects are unusually severe, it is rarely necessary to discontinue therapy.

Warner-Chilcott Laboratories, Division of Warner-Hudnut, Inc., cooperated by furnishing scientific data to aid in the evaluation of ethopropazine hydrochloride.

Fibrinogen (Human).—Fibrinogen is a protein essential for blood coagulation. It is prepared by alcohol fractionation from human plasma collected and prepared in accordance with the regulations of the National Institutes of Health.

Actions and Uses.—Fibrinogen (human) is indicated for certain extensive surgical procedures and for restoring plasma fibrinogen levels to normal as an adjunct in treating hemorrhagic complications caused by acute afibrinogenemia. This latter condition often accompanies premature separation of the placenta (abruptio placentae). It is also used in the prevention of hemorrhagic episodes resulting from congenital or acquired chronic hypofibrinogenemia. Although the risk of transmitting serum hepatitis is probably greater with fibrinogen (human) than with whole blood, the amount of fibrinogen that can be supplied by whole blood transfusion is inadequate to restore fibrinogen levels in acute afibrinogenemia. Fibrinogen (human) should not displace the use of whole blood when the latter is indicated to replace the loss of formed elements or other components arising from the hemorrhagic complications of fibrinogen deficiency.

In the employment of fibrinogen (human) the physician should weigh very carefully the hazard of transmitting the virus of serum hepatitis against the danger of hemorrhagic complications in which it may be lifesaving. It should not be employed in the absence of adequate blood coagulation studies and determination of plasma fibrinogen levels, except in emergencies when facilities for performing these procedures are not available. A plasma fibrinogen level of less than 50 mg. per 100 cc. is considered critically low; levels below 100 mg. per 100 cc. may indicate the need for fibrinogen, but, in chronic hypofibrinogenemia, low levels may be encountered without frank hemorrhage.

V 1
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Dosage.—Fibrinogen (human) is administered intravenously after reconstitution of a dried preparation with water for injection; 1 gm. of dried fibrinogen (human) is dissolved in 50 cc. of pyrogen-free sterile distilled water. The dried product should be stored at 2 to 10 C. It should be administered within one hour after reconstitution. In acute afibrinogenemia associated with premature separation of the placenta, the usual dosage is 2 to 6 gm. (100 to 300 cc.), depending upon the response of the patient. In other afibrinogenemic or hypofibrinogenemic conditions, the dosage should be adjusted according to the clinical observations and initial plasma fibrinogen levels. Whenever feasible, the latter are invaluable as an aid for determining the adequacy of the dosage.

Cutter Laboratories cooperated by furnishing scientific data to aid in the evaluation of fibrinogen (human).

COUNCIL ON FOODS AND NUTRITION

The following article adopted by the Council is published to explain in general terms the Council's new method of operation. EUGENE H. STEVENSON, M.S.
Acting Secretary.

NEW COUNCIL PROGRAM

One of the responsibilities of the medical profession is to assist in the attainment and maintenance of a high level of nutritional health in our nation. The American Medical Association can best meet this responsibility in the following manner: (1) by formulating desirable nutritional standards for foods and expressing opinions regarding their wholesomeness and usefulness, emphasizing those foods that have public health significance or are important in the feeding of special population groups, such as infants, invalids, and others; (2) by indicating what it believes to be desirable criteria for the formulation of accurate and informative advertising copy pertaining to foods and nutrition; and (3) by reporting to the profession and educating the public on all aspects of nutrition through the dissemination of accurate nutritional information.

Therefore, the activities of the Council on Foods and Nutrition of the American Medical Association shall be directed toward these three objectives, as described below.

FOOD STANDARDS

Desirable standards for certain classes of foods will be developed and periodically reviewed and revised as needed.

In addition to standards for special purpose foods, standards for general purpose foods of public health importance, such as vitamin D milk, iodized salt, and citrus juices, will be developed. As other properties of foods are subject to regulation by the Food and Drug Administration and by the laws of individual states, the standards proposed by the Council will be directed toward the improvement of the nutritional aspects of foods.

These standards will be made available to the medical profession and others interested through periodic reports in THE JOURNAL and elsewhere.

The Council may publish in THE JOURNAL informational reports on the use of the Council standards and on the extent to which labeling laws protect the public from false or incorrect claims and the misuse of Council standards.

The Council proposes to determine from time to time by independent evaluation whether products claimed to meet Council standards actually do so and to call incidents of mislabeling to the attention of the appropriate authorities or the profession as indicated.

FOOD ADVERTISING

To guide those concerned with the production and marketing of nutritionally better foods, the Council is revising its publication, "General Decisions on Foods and Food Advertising." This includes statements and decisions of the Council on food composition, food advertising, and special food questions relating to public health. The Council believes that these will serve as valuable aids in the composition of accurate and informative advertising copy.

Educational food advertising (informative advertising dealing with classes of foods without reference to specific brands, processors, or distributors) will continue to be an interest of the Council. A program will be conducted as in the past except that a seal will not be granted. When an educational advertisement has been reviewed by the Council and found to be consistent with current authoritative medical opinion, permission will be granted to use a statement indicating this fact.

NUTRITION EDUCATION

The Council, since its inception, has recognized its responsibility of interpreting the findings of nutritional research and disseminating accurate nutritional information to the physicians and the public. Expansion of this activity has been under study for some time by a Council committee and has been carefully explored in discussions of the full Council. With the discontinuation of the seal-acceptance program, the Council can now devote more of its energies in this direction.

The program of nutrition education will utilize a variety of means of communication. It will provide a source of accurate information for presentation to the profession and the public in national and local programs. It will sponsor conferences on a high professional level on topics of current interest in the field of nutrition, such as the recent Symposium on Inorganic Elements in Human Nutrition. It will prepare educational material for medical publications and when requested check for accuracy suitable news releases for the public press. The program will provide for Council-sponsored articles for presentation in THE JOURNAL and other Association publications.

The program of nutrition education will provide nutrition information to other interested organizations at national, state, and local levels through corresponding medical channels. The presentation of nutrition information in medical schools can be facilitated greatly by this program.

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PLACEBOS

Most dictionary definitions of a placebo are too restrictive for modern usage. Hofling [1] defines a placebo as a "therapeutic measure which is administered largely or entirely for a psychologic effect not inherent in its physical or pharmacologic properties." This definition does not limit usage to drugs. It is reasonable, for example, to speak of a heat treatment as having a placebo effect. Leslie [2] has classified placebos as pure when the effect is due entirely to their psychological effect and as impure when they contain a substance of some inherent pharmacological activity not relevant to the immediate problem. The patient's faith in his physician adds great psychic power to the efficacy of any therapeutic measure and makes the placebo an important adjunct to treatment. What constitutes a good placebo cannot be specifically stated, because what may be a good one for one patient may not be so for another even though he has a similar condition. However, anything that is so used must be inexpensive and nontoxic.[3]

Leslie defends the use of placebos on ethical grounds when they are used for the welfare of the patient. Sometimes a placebo may be needed as a stopgap to relieve distressing symptoms in a patient who must undergo prolonged diagnostic tests. There is always a danger in this situation that if the placebo works too well the physician will relax his efforts and miss a chance to treat disease in an early stage. An injection of sterile water for the patient after operation who is being weaned away from opiates may aid in preventing habituation. Surely it is as legitimate to give placebos for a condition that has been carefully diagnosed as it is to give them for one for which no scientific treatment exists. To tell a patient with such a condition that there is no help for him would be cruel and negligent. In dealing with patients whose dependent need for emotional security is great the physician may use placebos, not to deceive, but as an added emotional link with the patient. On the other hand, to give a placebo in order to quiet a patient at any cost indicates a negative approach to the real problem. It is poor practice to give a therapeutic agent as opposed to a pure placebo on the assumption that it can do no harm and may do some good. Vitamins are often given in this spirit, and if the patient appears to benefit the physician may come to think the improvement has been due to a specific effect of the placebo and may be tempted to use the same drug in treating a patient for whom a more specific treatment is available. To give vitamins to a well-nourished patient or injections of liver extract to one who is not anemic bespeaks an uncritical and confused state of mind in a physician.

A placebo should not be given when the physician-patient relationship is in jeopardy and not unless the physician has examined the indications for its use even more carefully than if he were to order specific therapy. Leslie gives many helpful suggestions regarding the technique of giving placebos. No placebo should be given for a prolonged period. If the placebo is in tablet form it should not look like aspirin in color, shape, or size. When withdrawing a placebo on which a patient has become dependent it will not help him to be told that it was only a placebo.

A special indication for the use of placebos is the double-blind test of the efficacy of a new drug, in which neither the physician nor the patient knows whether the patient is getting an active drug or a placebo. This sort of testing should keep the observations objective, but patients known as placebo-reactors, those who cannot discriminate clearly between active and inert drugs, have been found to exist.[4] A large number of such reactors in the control series would tend to decrease the difference between the results obtained with a potent and valuable drug and the controls, possibly to the point of indicating that the new drug was worthless. On the other hand, the optimal dosage of a drug may be underestimated if a large number of placebo-reactors whose symptoms are easily relieved by any medication have been included in the test group. This hazard sometimes may be overcome, if conditions permit, by making the patient his own control by giving drug A one time and drug B another time, one of these being the placebo and the other the drug being tested. If the symptoms of a chronic disease are being treated the test group and control group can be reversed at stated intervals, but if both groups contain many placebo-reactors the results may still be misleading. A complicating feature of this problem is that placebo-reactors are not consistent in their response. Studies are being conducted to try to enable experimenters to recognize and weed out placebo-reactors. This promises to be no easy task. Furthermore, it is difficult to evaluate the effect of drugs on a disease in which a large psychosomatic factor is present, such as peptic ulcer, hypertension, migraine, and scleroderma.

There are many legitimate uses for placebos, but physicians should use them wisely and avoid using them for any but the most carefully considered indications.

1. Hofling, C. K.: The Place of Placebos in Medical Practice, GP **11**: 103-107 (June) 1955.
2. Leslie, A.: Ethics and Practice of Placebo Therapy, Am. J. Med. **16**: 854-862 (June) 1954.
3. Carter, A. B.: The Placebo: Its Use and Abuse, Lancet **2**:823 (Oct. 17) 1953.
4. Lasagna, L.: Placebos, Scient. Am. **193**: 68-71 (Aug.) 1955. Lasagna, L.; Mosteller, F.; von Felsinger, J. M., and Beecher, H. K.: A Study of the Placebo Response, Am. J. Med. **16**: 770-779 (June) 1954.

AWARD FOR A. M. A. COMMITTEES

The American Medical Association, through its Committee on Pesticides and Committee on Toxicology, has been awarded a national home safety Certificate of Commendation for exceptional public service in the prevention of home accidents during the year 1954-1955 by the National Safety Council. The award was bestowed for the committees' educational efforts to reduce accidental poisoning. The Committee on Pesticides studies the dangers involved in the use of agricultural chemicals, while the Committee on Toxicology investigates the health problems of household and industrial chemical products. The two committees conduct educational and research programs on two fronts: first, to increase public understanding of the proper use of chemicals; and, second, to provide guidance to the medical profession on the many health questions that are associated with the use of chemicals.

The older of these two groups is the Committee on Pesticides, which was formed in January, 1950. As part of its education program, it has prepared 20 interpretative statements reviewing the medical and public health aspects of agricultural chemicals. These have had worldwide distribution and have been translated into several foreign languages. An exhibit on accidental poisoning and a radio transcription on the same theme have been in constant demand by medical societies and lay health groups. The Committee on Pesticides has also encouraged greater consideration of economic poisons in the curriculums of medical and pharmacy schools by providing outlines of information, organizing symposiums, and arranging for experimental studies of pharmacologically interesting pesticidal compounds.

The Committee on Toxicology was organized more recently. It was set up early this year as a result of a House of Delegates resolution calling for the dissemination of information on potentially poisonous household chemicals. The Committee is studying means and recommending measures to decrease the risks of accidental poisoning. To this end, it has sponsored a conference on the health problems of household chemicals and published or prepared for publication several reports. In cooperation with the Committee on Pesticides it is presently organizing a symposium on the health hazards of chemicals for the annual meeting of the American Association for the Advancement of Science.

The Committee on Pesticides and the Committee on Toxicology are to be commended for their accomplishments and deserve continued support in their activities. They and other organizations similarly engaged in the prevention of poisoning and other accidents need the active assistance of all physicians if further gains are to be made.

FARM/CITY WEEK

In his State of the Union Message in 1954 President Eisenhower said, "The well-being of our 160 million people demands a stable and prosperous agriculture. Conversely, every farmer knows he cannot prosper unless all America prospers." Acknowledging this counsel, the American Medical Association, together with 400 other organizations, is participating this week in the first observance of Farm/City Week, October 23-29. Under the sponsorship of the Farm-City Conference, an informal alliance of leaders in industry, agriculture, and the professions, the observance is dedicated to the creation of better understanding between rural and urban dwellers. Specifically, its function is to provide demonstrations of the civic, social, and economic bonds between city and farm neighbors that characterize our national vigor.

Kiwanis International and its member clubs are spearheading this program, which is being formally launched today (October 22) by the Secretary of Agriculture Ezra Taft Benson at the Department's Agricultural Research Center in Beltsville, Md. The presence of both Secretary of Labor Mitchell and Secretary of Commerce Weeks is expected to give added momentum to the observances that are to be held throughout the United States during the ensuing days of this first Farm/City Week.

Kiwanis clubs have been requested to seek the support and manpower of medical societies in formulating and effecting these community programs. Farm/City Week is, of course, a nonpartisan public service venture, and it presents an unexcelled opportunity for medical societies to exercise civic leadership, dramatize medicine's services, win support of community health programs, and enjoy the reciprocal benefits of a cooperative public relations program.

Medicine's year-round programs covering nutrition, sanitation, physician-procurement, preventive medicine, child welfare, mental health, vocational guidance, and budgeting for medical expenses are but a few topics that are pertinent to the medical society's participation in Farm/City Week. Newspapers, radio, and television are among the communication mediums eager to receive information and to report these activities that are conducted in the interest of public health. Tours of medical facilities by civic groups and students, addresses, and open houses are also effective means of calling attention to the services of the local medical society. Because organized medicine is a recognized integrant of both rural and urban communities, doctors are urged to participate in Farm/City Week observance and thereby indicate medicine's interest in the welfare of all.

ORGANIZATION SECTION

FEDERAL MEDICAL LEGISLATION

First Session, 84th Congress

Surplus Property for Civil Defense

Senator Humphrey (D., Minn.), in S.1527, and Congressman Brooks (D., Texas), in H. R. 7227, would authorize the distribution of federal surplus property for civil defense purposes. These bills were referred to the respective government operations committees.

Educational Expenses for Higher Education

Congressman Jackson (R., Calif.), in H. R. 4444, would amend the Internal Revenue Code to provide a partial tax credit for income tax purposes for payments to educational institutions for the cost of education above the 12th grade. Credit would be given for 30% of payments, with a maximum credit of $450 for the education of each person. This measure was referred to the Ways and Means Committee.

Medical Deductions for Income Tax Purposes

Congressman Hyde (R., Md.), in H. R. 5336, would remove the 3% limitation on deductions for income tax purposes on the amounts paid for medical and dental expenses and would remove the maximum limitation on allowable medical expenses. Where the taxpayer or spouse is 65 years of age or older, the 1% limitation for drugs and medicine before deductions are calculated would also be removed. This measure was referred to the Ways and Means Committee.

Twenty Year Permanent and Total Disability

Congressman Wilson (R., Ind.), in H. R. 6447, would amend the veterans regulations to liberalize the statute used by the Veterans Administration in calculating the 20 year period following which disability rating may not be reduced. The bill would also restore disability rating that has been reduced under the present regulations, except when it could be shown that such a rating was based on fraud. Congressman Wilson proposes that the date the disability began as certified by the Veterans Administration be used instead of the actual date the determination was made, as is the present practice. This bill was referred to the Veterans' Affairs Committee.

Free Poliomyelitis Vaccine

Congressman Burnside (D., W. Va.), in H. R. 6973, provides an unlimited appropriation for poliomyelitis vaccination and would include free transportation in the event mass inoculation would take place after the close of school. This measure was referred to the Interstate and Foreign Commerce Committee. Congressman Sullivan (D., Mo.), in H. R. 7206, would authorize unlimited appropriations to permit the National Foundation for Infantile Paralysis to conduct vaccination against poliomyelitis of children under 20 years of age without any means test. The foundation would be given authority to make regulations for use of the vaccine, including allocation, distribution, and establishment of priorities. This bill was referred to the Committee on Interstate and Foreign Commerce.

From the Washington Office of the American Medical Association.

Medical Advisory Committee on Alcoholism

Congressman Huddleston (D., Ala.), in H. R. 7254, would establish a medical advisory committee on alcoholism in the Department of Health, Education, and Welfare: "(1) to advise and cooperate with the United States Public Health Service (and particularly with its Mental Hygiene Division) in promoting education on alcoholism throughout the departments and agencies of the Federal Government; (2) to promote education on alcoholism throughout the several States, acting primarily through the State departments of health; (3) to advise on the establishment of clinics for the care of alcoholics; (4) to advise the departments and agencies of the Federal Government on the establishment of facilities for the care of alcoholics at various stages of the disease, and particularly to advise with respect to the different types of medical approach which are required for rehabilitation at the different stages; (5) to advise educational bodies on medical matters connected with alcoholism, and to provide for material for inclusion in the syllabus of the various educational institutions; and (6) to provide advice, from a medical, educational, community, and socio-logical point of view, regarding the care, treatment, and prevention of alcoholism throughout the country." Two-thirds of the members of the committee must be physicians licensed to practice medicine. This measure is identical with H. R. 3937 by Radwan (R., N. Y.). It was referred to the Committee on Interstate and Foreign Commerce.

Cash Disability Payments under Social Security

A series of bills were introduced to lower the age for cash disability benefit payments to those under social security who have been disabled at an earlier date than the age 65 set for those retired under the Old-Age and Survivors Insurance program. The proposals in these bills would make payments available at an earlier age, generally after six months of disability. There are minor differences in these bills: S. 2387 (Humphrey; D., Minn.), H. R. 6655 (Reuss; D., Wis.), H. R. 6580 (Karsten; D., Mo.), H. R. 6812 (Johnson; R., Wis.), H. R. 6935 (Alexander; D., N. C.), H. R. 6920 (Jennings; D., Va.), H. R. 6902 (Dorn; R., N. Y.), S.1639 (Long; D., La.), S.2293 (Kennedy; D., Mass.), H. R. 3610 (Roberts; D., Ala.), H. R. 4489 (Siler; R., Ky.), H. R. 6415 (Perkins; D., Ky.), H. R. 6898 (Canfield; R., N. J.), H. R. 7208 (Fino; R., N. Y.), and H. R. 7246 (Ashmore; D., S. C.). A number of these bills are identical with measures previously introduced. The Senate bills were referred to the Finance Committee and the House measures to the Ways and Means Committee.

NEW DAYTIME TELEVISION PROGRAM

The American Medical Association is cooperating with a filmed television program on infant care that started the week of Oct. 16 on local stations throughout the country. Titled "It's Baby Time," the daytime program will feature W. W. Bauer, M.D., Director of the A. M. A.'s Bureau of Health Education, as medical narrator and Jane Warren, R.N., as demonstrator of nursing procedures. The 15-minute feature will take up common problems in the development and feeding of healthy babies. Since it is being placed on individual television stations and not through an established network, "It's Baby Time" will be seen on a schedule that varies from community to community. Sponsor of the show is Libby Baby Foods.

Here is the station line-up for the new program: New York, WABC, Tuesday and Thursday, 11:45 a. m.; Chicago, WGN-TV, Wednesday and Friday, 1 p. m.; St. Louis, KSD-TV, Tuesday and Thursday, 8:30 a. m.; Pittsburgh, KDKA-TV, Tuesday and Thursday, 2 p. m.; Nashville, Tenn., WSM-TV, Thursday and Friday, 12:15 p. m.; Milwaukee, WISN-TV, Thursday and Friday, 1 p. m.; Minneapolis-St. Paul, KSTP-TV, Tuesday and Thursday, 11:45 a. m.; Norfolk, Va., WTAR-TV, Thursday, 1 p. m.; Tampa-St. Petersburg, Fla., WFLA-TV, Thursday, 2:15 p. m.; Kansas City, Mo., KCMO-TV, Tuesday, 12 noon; El Paso, Texas, KROD-TV, Thursday, 11 a. m.; Louisville, Ky., WHAS-TV, Thursday, 12 noon; Mobile, Ala., WKRG-TV, Friday, 12:45 p. m.; Seattle, KING-TV, Thursday, 12:30 p. m.; and Miami, WTVJ, Monday, 9:45 a. m.

PLANS FOR RURAL HEALTH CONFERENCE

The A. M. A. Council on Rural Health met Sept. 9-10 with its advisory committee composed of representatives of leading agricultural organizations. The joint group reviewed policies and made plans for the ensuing year's activities. The advisory committee also assisted the Council in planning for the 11th National Conference on Rural Health that is to be held at the Multnomah Hotel, Portland, Ore., March 8-10. The theme will be "Your Doctor and You." The Thursday morning session, March 8, will be devoted to an informal session to study and discuss doctors' participation in community activities. The conference will take up such subjects as the family and the physician, mental health, problems of the aging, health insurance, and other health topics of interest to rural groups.

REVISED LIST OF FILMS

A revised list of films available through the A. M. A. motion picture library has been prepared, and copies are available on request from the Committee on Motion Pictures and Medical Television of the American Medical Association. This catalogue lists 83 medical films suitable for showing to medical societies, hospital staff meetings, and other scientific groups. The catalogue also includes 36 health films of interest to physicians who may be called upon to speak before lay audiences such as service organizations and Parent-Teacher Associations.

COUNCIL ON MEDICAL SERVICE

A STUDY OF MATERNAL AND CHILD CARE IN THE UNITED STATES

This is section B of the third in a series of articles by the Committee on Maternal and Child Care of the Council on Medical Service reviewing state and local medical care programs for mothers and children. Section A, on Nebraska as a whole, appeared in THE JOURNAL, *June 25, 1955, page 691. This section is devoted to maternal and child health in the communities of Lincoln and Omaha.*

Over 26% of the people of Nebraska live in the two cities of Lincoln and Omaha, 28% of the resident births in Nebraska are in these two cities, and 35% of the total births in Nebraska occur in their hospitals. It is of interest in this study, then, to examine rather closely statistics and descriptive data relative to maternal and child health in both cities with a view to correlating them with statewide statistics and factors within the metropolitan and rural areas that may have a part in the total improvement of maternal and child health in Nebraska.

TABLE 1.—*1953 Hospital Statistics for Lincoln*

Births	
Total infants delivered in the 3 hospitals of Lincoln	2,974
No. of stillbirths (fetal deaths reported over 20 weeks' gestation)	39 (1.3%)
Total live births	2,935
Total live-born premature infants	135 (4.6%)
Deaths	
Total maternal deaths	0
Total neonatal deaths	66 (19.0/1,000 live births)
Neonatal deaths due to or associated with prematurity	40 (71.4%)
Neonatal deaths—other causes	16 (28.6%)

MATERNAL AND CHILD HEALTH IN LINCOLN

Statistics.—According to statistics supplied by the Lincoln-Lancaster County Health Department, the city of Lincoln, with a population of 98,884 (1950 census), had 2,504 resident births in 1952 including 46 registered fetal deaths (stillbirths). Two maternal deaths occurred in 1952. Resident infant deaths in Lincoln totaled 48 (19.5 per 1,000 live births) in 1952. This represents an infant mortality rate of 17% less than the state as a whole and 32% less than the United States average. In 1953 two of the three hospitals of Lincoln had records of 237 previable fetal deaths (under 500 gm. or less than 20 weeks' gestation). These early fetal deaths are not reported as stillbirths, in accord with the state health department's definition of a stillbirth, and, therefore, many hospitals do not keep complete records. The combined rate of such early fetal deaths (abortions or miscarriages) for the two hospitals is 99.2 per 1,000 live births (exclusive of regularly reported stillbirths—so-called viable sized fetal deaths).

Committee Members are: W. L. Crawford, M.D., chairman, Rockford, Ill.; R. B. Chrisman Jr., M.D., Miami, Fla.; Philip S. Barba, M.D., Philadelphia; Harold S. Morgan, M.D., Lincoln, Neb.; J. L. Reichert, M.D., Chicago; Garland D. Murphy, M.D., El Dorado, Ark.; Howard A. Nelson, M.D., Greenwood, Miss.; and Donald A. Dukelow, M.D., consultant, Chicago.

TABLE 2.—*Age at Death in Hospital of Infants Born in Lincoln Hospitals Who Died in the Neonatal Period, by Birth Weight (1953)*

Birth Weight, Gm.	No. of Neonatal Deaths by Completed Days of Age at Death: Total	Under 1 Day (Under 24 Hr.)	1 Day (24-47 Hr.)	2 to 6 Days (48-167 Hr.)	7 to Under 28 Days	Age Unknown
500 or less	2	2	..	..	..	..
501-1,000	9	9	..	..	..	..
1,001-1,500	9	5	1	3	..	..
1,501-2,000	13	7	1	5	..	..
2,001-2,500	2	..	1	1	..	..
Premature, but weight unknown	5	..	..	..	..	5
Total, 2,500 or less	40	23	3	9	..	5
2,501-3,000	5	1	2	2	..	..
3,001-3,500	8	3	..	4	1	..
3,501-4,000	1	..	..	1	..	..
4,001-4,500	2	1	..	..	1	..
4,501-5,000	..	..	..	..	..	..
5,001 or more	..	..	..	..	..	..
Birth weight unknown	..	..	..	..	..	..
Total, 2,501 or more	16	5	2	7	2	..
Total	56	28	5	16	2	5

Tables 2 and 3 indicate neonatal deaths by age and birth weight and by cause of death and birth weight respectively. The tables are given as recommended (slightly modified) in Standards and Recommendations for Hospital Care of Newborn Infants: Full Term and Premature, American Academy of Pediatrics. Of the 16 neonatal deaths unassociated with prematurity, the largest number, 7, were due to atelectasis or atelectasis combined with pneumonitis; fetal erythroblastosis caused 3 deaths and congenital heart abnormalities 3 deaths. Table 2 shows that 50% of the total neonatal deaths occurred within 24 hours after birth, and this occurrence is considerably greater for those infants whose birth weights were less than 2,500 gm. than for those over 2,500 gm. Table 3 indicates that 28 (50%) of the total neonatal deaths were classified as due to "prematurity (immaturity), unqualified" (autopsies were done on two infants in this group). The greatest specific cause of death of both premature and full-term babies was postnatal asphyxia and atelectasis, with congenital malformations the second greatest cause. Autopsies had been done in most of these cases.

Lancaster County Medical Society.—The Lancaster County Medical Society represents about 200 physicians in the city of Lincoln and county of Lancaster. Eight pediatricians and nine obstetricians serve Lincoln and environs. Although the society has regular standing committees and special advisory committees that maintain close liaison with the public, it has no special standing committee concerned with maternal and child care. The state medical association committees serve this need. The state association office is located in Lincoln.

Well-Child Conferences.—The Lincoln-Lancaster County Health Department operates two well-child clinics per week. Eligibility rules are flexible, but the clinics are maintained essentially for those who cannot afford private care. A local pediatrician is employed on a part-time basis to conduct the clinics, and attendance is arranged by appointment as scheduled by the public health nurse. Records indicate that 185 infants and preschool children made 606 visits to the clinics in 1953. In addition, 1,548 public health nursing visits were made to these and other infants and children in their homes.

TABLE 3.—*Cause of Death in Hospital of Infants Born in Lincoln Hospitals Who Died in the Neonatal Period, by Birth Weight (1953)*

Cause of Neonatal Death *	No. of Neonatal Deaths of Live-Born Infants: Total	Total 2,500 Gm. or Less	500 Gm. or Less	501-1,000 Gm.	1,001-1,500 Gm.	1,501-2,000 Gm.	2,001-2,500 Gm.	Premature, but Birth Weight Unknown	Total 2,501 Gm. or More
Postnatal asphyxia and atelectasis (762)	14	7	..	..	3 (1†)	3 (1†)	1	..	7 (1†)
Injury at birth (760-761)	1	..	..	..	..	..	..	..	1
Congenital malformations (750-759)	8	4	..	..	2 (1†)	2	..	..	4
Infections of newborn infants (763-768)	2	1	..	..	..	..	1	..	1
Blood dyscrasias (770-771)	3	..	..	..	..	..	..	..	3
All other known causes	..	..	..	..	..	..	..	..	..
Unknown cause									
Prematurity (immaturity) unqualified (776)	28	28	2 (1†)	9 (9†)	4 (4†)	8 (7†)	..	5 (5†)	..
All other neonatal deaths from unknown cause	..	..	..	..	..	..	..	..	..
Total	56	40	2	9	9	13	2	5	16

* According to International Statistical Classification of Diseases, Injuries and Causes of Death, Sixth Revision.
† Autopsy not performed in these cases.

Other Health Department Maternal and Child Health Activities.—A dental clinic is conducted four hours per day, five days a week, by the city-county health department under the supervision of a part-time dentist. Services are primarily for those preschool and school children who cannot afford private care. A total of 1,329 examination and treatment services were provided to 493 patients in 1953, 308 of whom were school and preschool children. The immunization service of the health department accounted for 14,835 smallpox vaccinations, plus 588 triple antigen shots and 520 booster shots given to infants and preschool and school children. The health department's maternity service (prenatal and postpartum care) was very small, with only eight patients and a total of 49 prenatal and 9 postpartum care clinic visits. The health department nurses, however, made a total of 265 field visits for antepartum and postpartum care. Expectant parent's classes are conducted each year under the auspices of the department's nursing service, the obstetric departments of the three hospitals, the medical society, the Red Cross, the local Y.W.C.A., and the state health department. Class attendance in 1953 was 582.

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Child Guidance Center.—The Lincoln-Lancaster County Child Guidance Center is a nonprofit (dues-paying members) organization administered by a board of directors of 24 in cooperation with the mental health division of the state board of health (federal funds) and with additional financial assistance from the Community Chest and other agencies. Seven local physicians are members of the board of directors and five are members of the center's advisory and policy committee. The center proceeds under psychiatric guidance in all cases and is the only private resource of its kind in the state. The fee schedule is flexible, and no charge is made in appropriate cases. During 1954 approximately four diagnostic cases, two consultation cases, and four treatment cases were opened each month. Continuing treatment cases carried averaged about 35. In addition, a monthly average of 11 community presentations was made by the staff of the center.

School Health Services.—The health activities of the 31 public schools of Lincoln with an enrollment of approximately 17,000 are the direct responsibility of the board of education. The school health service staff consists of one school nursing supervisor, 13 nurses, 2 part-time dentists, an orthopedic consultant, and a psychiatric consultant. Aid comes from the local health department and the Lancaster County Tuberculosis Association in special activities such as screening for tuberculosis. The city parochial schools and county schools are provided health services by the health department. All kindergarten, third, sixth, and ninth grade public school children (approximately 3,000) are urged, through their parents, to have a physical examination by their private physician. The board of education no longer provides such examinations in the schools. Teachers and other new employees must have had complete medical examinations prior to their being accepted into the Lincoln schools. All public school children from kindergarten to the 12th grade are screened each year for nutritional status and are given vision and throat screening; audiometric tests are given to all 4th, 7th, and 10th grade students; limited dental inspections are made on all children during the first month of school; patch tests are given to all 5th grade pupils; and complete chest x-rays are done annually on all 10th grade pupils, teachers, and school employees. Health education is taught through junior and senior high school courses in health and safety and hygiene and physiology. A three hour college credit symposium in health education is offered for all teachers and nurses. Monthly meetings on health education and information on health activities in school are held for parents.

During the 1953-1954 school year, 2,174 pupils received school physical examinations (a new policy of not providing medical examinations in school began with the 1954-1955 school year); 22% were referred to their family physicians for follow-up and treatment. Dental inspections resulted in 16,508 referrals; vision screening resulted in 236 vision defects corrected; tuberculosis testing and x-rays resulted in 4.3% abnormal conditions found; and follow-up showed 25 pathological conditions discovered.

TABLE 4.—*Vital Statistics* (1952)*

Total resident births	7,079
Live births	6,959
Registered fetal deaths (stillbirths)	120 (1.7%)
Percentage delivered in hospitals	99.6%
Maternal deaths (resident)	6 (0.86/1,000 live births)
Infant deaths (resident)	176 (25.3/1,000 live births)

* Omaha-Douglas County Health Department.

TABLE 5.—*1953 Hospital Statistics* for Omaha*

Births	
Total infants delivered in the 10 hospitals	9,347
No. of stillbirths (fetal deaths over 20 weeks' gestation)	124 (1.3%)
Total live births in the 9 hospitals	9,223
Total live-born premature infants	467 (5.1%)
Deaths	
Total maternal deaths	7 (0.76/1,000 live births)
Total neonatal deaths	158 (17.1/1,000 live births)
Neonatal deaths due to or associated with prematurity	123 (78%)
Neonatal deaths—other causes	35 (22%)

* All hospitals of Omaha, including the U. S. Air Force Hospital at Offutt Field (outside the city limits).

MATERNAL AND CHILD HEALTH IN OMAHA

Statistics.—Omaha's 1950 census indicates 251,119 inhabitants, 25,474 (10.1%) of whom were under 5 years of age. Foreign-born white persons account for 7% and nonwhite persons another 7% of the city's population. The median school years completed for residents over 25 years of age was 11.4. Some vital statistics for 1952 relative to maternal and child health in Omaha are found in table 4. As in the previous section on Lincoln, three additional tables are presented to give detailed information on maternal and neonatal deaths occurring in the local hospitals in 1953. These data cannot be compared with health department data in table 4 because they necessarily include other than Omaha resident births. Two of the 10 Omaha hospitals had available data on deaths (abortions or miscarriages) in previable fetuses under 500 gm. or under 20 weeks' gestation. The combined rate for these two hospitals was 54 per 1,000 live births. Table 5 summarizes the vital statistics from the 10 Omaha hospitals, and tables 6 and

TABLE 6.—*Age at Death in Hospital of Infants Born in the Ten Omaha Hospitals Who Died in the Neonatal Period, by Birth Weight (1953)*

	No. of Neonatal Deaths by Completed Days of Age at Death						
Birth Weight, Gm.	Total	Under 1 Day (Under 24 Hr.)	1 Day (24-47 Hr.)	2 to 6 Days (48-167 Hr.)	7 to Under 28 Days	Age Unknown
500 or less	4	4	..	..	..	..
501-1,000	30	14	11	5	..	..
1,001-1,500	25	13	4	7	1	..
1,501-2,000	20	8	7	4	1	..
2,001-2,500	25	12	8	4	1	..
Premature, but weight unknown	19	4	7	..	..	8
Total, 2,500 or less	123	55	37	20	3	8
2,501-3,000	9	..	8	1	..	..
3,001-3,500	12	5	2	5	..	..
3,501-4,000	8	5	..	3	..	..
4,001-4,500	2	..	1	1	..	..
Birth weight unknown	4	2	1	..	..	1
Total, 2,501 or more	35	12	12	10	..	1
Total	158	67	49	30	3	9

7 give detailed information on the neonatal deaths by age at death and birth weight and by birth weight and causes of death respectively.

Almost one-half (45%) of the neonatal deaths of premature babies in Omaha hospitals occurred within 24 hours after birth, and, as with Lincoln, the number of deaths of full-term babies was only one-third as great during the first 24 hours as after that time. Autopsies had been done in one-third of the neonatal death cases that were classified prematurity, unqualified, and the total in this classification constituted over one-half (56%) of all neonatal deaths of infants under 2,501 gm. Again, as in Lincoln, the greatest specific cause (other than prematurity, unqualified) of neonatal death was postnatal asphyxia and atelectasis, with autopsy having been done in 38 out of the 43 cases in which this diagnosis was made. Congenital malformations and injuries at birth ranked second and third respectively.

Omaha-Douglas County Medical Society.—The Omaha-Douglas County Medical Society's office, and headquarters, in Omaha is the focal point through which the profession's organized efforts reach the public. Efforts toward improvement in public health are well exemplified by the work of its committee on education and preventive medicine that, in cooperation with other agencies, keeps before the public all types of health education material from "First Aid in the Home" to "Old Wives Tales—Pregnancy" via television, radio, the press, and various publications. The society has approximately 400 active members, including 18 pediatricians and 19 obstetricians who serve the Omaha area.

Well-Child Clinics.—Eight well-child clinics covering the various areas of the city are sponsored by the Omaha-Douglas County Health Department's division of public health nursing (Visiting Nurse Association) with the cooperation of the University of Nebraska Hospital and financial support from the Community Chest and other agencies. Eligibility is limited to those under a certain income level who would otherwise probably not seek this care through a private physician. The purpose of this program is to keep the well child well and find defects early. No immunizations or treatments are given at these clinics—rather those in need of these services are referred to a private physician or the Health Department Immunization Clinic. Medical policy is determined by a medical advisory committee of the local medical society, which body also approves the physicians who conduct each clinic. During 1953 a total of 197 well-child clinics were held, serving 594 infants and 1,430 preschool children. In addition to the above-described clinics, both medical schools in Omaha have well-child clinics at their respective dispensaries that are limited to those infants delivered at their respective affiliated hospitals.

Immunization Program.—The health department and its division of public health nursing (Visiting Nurse Association) sponsor the program of immunization as a preventive health service without restriction as to income level. However, the children served are mostly those referred by public health and public school nurses. Each of the three clinics (located in strategic areas of the city) is open every Saturday morning and staffed by a part-time physician and one or more public health nurses. Children are immunized against smallpox, diphtheria, whooping cough, and tetanus; during 1953 approximately 5,000 visits were made to these clinics.

Public Health Nursing in Omaha (Relative to Maternal and Child Health).—The Visiting Nurse Association of Omaha has been incorporated into the reorganized Omaha-Douglas County Health Department as its division of public health nursing. In addition to the division's part in the above-described clinics it plays an integral part in the health services to the 41 parochial schools of Omaha and the 52 public schools in Douglas County (exclusive of Omaha). Also, the division's nursing service is available to prenatal patients on a fee basis or free, as the financial situation of the family indicates. Creighton University Dispensary routinely refers all prenatal patients to the Visiting Nurse Association. The University of Nebraska Dispensary refers many of its prenatal patients and all of its primiparas after delivery. The division nurses made a total of 33,462 home visits during 1953, and 17,739 (53%) were concerned with maternity, infant, preschool and school children, and orthopedic cases. Besides the director, the division (Visiting Nurse Association) employs an educational director, 3 supervisors, 3 physical therapists, and 27 nurses.

TABLE 7.—*Cause of Death in Hospital of Infants Born in the Ten Omaha Hospitals Who Died in the Neonatal Period, by Birth Weight (1953)*

Cause of Neonatal Death *	No. of Neonatal Deaths of Live-Born Infants								
	Total	Total 2,500 Gm. or Less	500 Gm. or Less	501-1,000 Gm.	1,001-1,500 Gm.	1,501-2,000 Gm.	2,001-2,500 Gm.	Premature, but Birth Weight Unknown	Total 2,500 Gm. or More
Postnatal asphyxia and atelectasis (762)	43	35	..	3	8	16 (2†)	14 (2†)	..	8 (1†)
Injury at birth (760-761)	10	7	..	..	1	3	1	2	3 (1†)
Congenital malformations (750-759)	16	6	..	..	..	3	2	1	10 (3†)
Infections of the newborn (763-768)	2	2	..	..	..	..	1	1	..
Blood dyscrasias (770-771)	6	1	..	..	..	..	..	1	5
All other known causes	4	2	..	..	1	..	1	..	2
Unknown cause									
Prematurity (immaturity) unqualified (776)	70	69	4 (1†)	27 (17†)	15 (13†)	4 (4†)	5 (3†)	14 (10†)	1 (1†)
All other neonatal deaths from unknown cause	7	1	..	..	..	..	1 (1†)	..	6 (5†)
Total	158	123	4	30	25	20	25	19	35

* According to International Statistical Classification of Diseases, Injuries and Causes of Death, Sixth Revision.
† Autopsy not performed in these cases.

Health Education in Omaha (Relative to Maternal and Child Health).—The health education division of the health department directs the collection and dissemination of information relating to maternal and child health. The division assists and cooperates with other professional groups and agencies such as the medical society, dental society, P.T.A., and United Community Services. A library of books, current literature, and films is maintained; preservice programs are conducted for nurses and medical students in which the University of Nebraska, Creighton University, and the University of South Dakota participate.

Omaha Public School Dental Clinic.—The Omaha Public School Dental Clinic was established under the joint sponsorship of the Omaha Board of Education and the health department upon the recommendation of the Omaha District Dental Society after a survey in which it was concluded that dental decay was a major problem in Omaha school children and that all available preventive measures should be employed. A complete four-chair full-time dental clinic was established at Central High School. A full-time dental assistant and a receptionist are paid by the board of education. Four part-time dentists are paid by the health department (state and federal funds). During the 1952-1953 school year, 5,449 patients visited the clinic and received a total of 24,837 services, such as fillings, extractions, prophylaxis, and x-rays.

School Health Program.—The board of education through its office of special services administers the public school health program with the advice and cooperation of the health department and the local physicians. No medical director or part-time physicians are employed, and, therefore, no physical examinations are performed in the schools. Rather, this phase of the health appraisal is accomplished in private doctors' offices and at the available dispensaries and clinics for those who cannot afford private physician care. Parents are encouraged to have their children examined before kindergarten and in the 3rd, 5th, 8th, and 11th grades. The screening phase of the health appraisal of public school children is accomplished by 20 full-time school nurses and the teachers. This screening includes nutritional status, vision, hearing, skin and scalp, nervous symptoms, speech, and posture. Dental screening and examination is done by private dentists and the public school dental clinic. Tuberculin tests are given all ninth graders, cafeteria workers, teachers, and custodial help by the tuberculosis association. Teachers are oriented into the school health program during the week prior to school, and parents are kept informed on school health activities through P.T.A. and home visits by nurses. The board of education conducts a special school for the handicapped where teaching is combined with physical, occupational, and speech therapy. During the 1952-1953 school year, over 5,000 treatments were given to registered handicapped children through the public school system.

Of the 24,437 kindergarten through eighth grade pupils registered in 1952-1953, 97.4% had had a medical examination as of June 1, 1953, 7,115 (29.1%) having had one during the year, with 6,165 (87%) having been performed by the family physician. During this same year, 7,700 pupils received dental certificates for work completed or no work needed, and 3,349 additional pupils made one or more visits to a dentist; 11,324 pupils were given vision tests, resulting in 1,313 being fitted with glasses; and 2,324 had audiometric tests, with 319 defective hearing cases found and 271 pupils receiving ear examinations. During the 1952-1953 year, the total defects found through physical examinations and screening procedures were 20,187; 16,031 were seen by doctors; 14,003 corrections were made and 2,028 were under treatment; and 91.2% of the pupils had been vaccinated and 95% immunized against diphtheria and whooping cough.

CONCLUSIONS

Section B of this study, on Lincoln and Omaha, is closely related to section A, which was concerned with maternal and child care on a statewide basis. The services and facilities available and the various factors related to the improvement of maternal and child care on a state level apply with even greater emphasis to these two metropolitan areas. For instance, the median school years completed for residents of Omaha over 25 years of age was 11.4, compared to 10.1 for the state. The study (sections A and B) indicates that much emphasis has been placed on health education. The "Nebraska School-Community Health Program," the Omaha-Douglas County Medical Society's radio and television programs, the state and local health department programs, the state medical society's efforts through committees and individual members, the Nebraska Public Health Association's contributions, and the assistance from other health agencies have undoubtedly contributed to the improvement of maternal and child health.

The total neonatal death rates for the state as a whole compare very favorably with those of the hospitals of Lincoln and Omaha. Therefore, it is apparent that quality care is being administered throughout the state and that, through the emphasis on education, the citizens have been taught to seek those health services that are available to them through their private physicians. A careful study of the tables presented relative to age, weight, and cause of death should indicate quite clearly specific areas where problems still exist. The beginning that Nebraska has already made is a pointer in the direction of still greater progress in the improvement of maternal, infant, and child health in the state's metropolitan and rural areas.

The education of the laity in matters of health is important, but of equal importance is the emphasis placed upon a high standard of obstetric and pediatric care by the physicians of Nebraska. This has been greatly facilitated by the presence in Nebraska of two medical schools and their affiliated hospitals. Other hospitals of the state have tended to keep pace, due to the medical staff's awareness of facilities necessary and the state health department's assistance in maintaining high standards of hospital care for mothers and babies of Nebraska through its division of maternal and child health.

MEDICAL NEWS

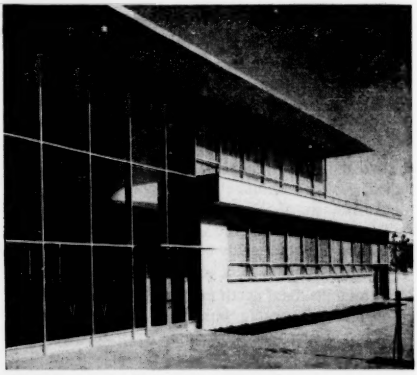
CALIFORNIA

Symposiums in San Diego.—The Los Angeles campus of the University of California School of Medicine and Medical Extension in cooperation with the San Diego County Medical Society will present the following symposiums from 2 to 10 p. m. at San Diego County General Hospital:

Oct. 26, Repair of Superficial Wounds and Burns.
Nov. 2, Radioisotopes in Medical Practice.
Nov. 9, Surgery of the Hand.

Applications should be made to Dr. Thomas H. Sternberg, Assistant Dean for Postgraduate Medical Education, University of California School of Medicine, Los Angeles 24.

Society Moves Its Headquarters.—The San Francisco Medical Society and its blood bank recently have moved from the old mansion at 2180 Washington St. to a new fireproof concrete building at 250 Masonic Ave., practically the geographical center of the city. The building may be easily expanded to a full three stories, and a balcony seating 250 may be added to the auditorium, which now seats 500. Space for the minifilm unit, an



Entrance to new headquarters of San Francisco Medical Society.

office for the woman's auxiliary, and a large kitchen adjacent to the auditorium are also on the first floor. The L-shaped blood bank, occupying the major part of the first floor, has a separate entrance. A conveyor along the south side runs from the donors' room to the refrigerator. The society entrance has a striking cantilever staircase, set in a planting area, leading to the society's administrative offices and a directors' room on the second floor. The wings of the building enclose a courtyard with a glassed-in promenade off the auditorium. Ample parking facilities are included.

Course in Pediatrics.—Recent advances in basic aspects of pediatric medicine will be presented by the University of California School of Medicine and University Extension at the university's medical center in Los Angeles Oct. 27-29. The subjects include Problems in the Management of the Newborn Infant; Problems of the Noncompetitive Child; Pediatric Aspects of Cardiology; Anemias of Infancy and Childhood; and Fluid Balance and Electrolyte Therapy in Pediatrics. Application or request for information concerning this course should be made to Dr. Thomas H. Sternberg, Assistant Dean for Postgraduate Medical Education, University of California Medical Center, Los Angeles 24 (GRanite 8-9711).

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

COLORADO

Meeting of Hospital Association.—The Colorado Hospital Association will hold its 31st annual meeting at the Cosmopolitan Hotel, Denver, Oct. 25-26. The subjects for discussion will be "The Growth and Changing Role of Hospitals"; "Impact on Hospitals of New Methods of Treatment"; "The Chronically Ill and the Care of the Aged"; and "What Plans Should Hospitals Lay for Them?"

FLORIDA

Meeting of Practitioners.—The Florida Academy of General Practice will hold its sixth annual scientific assembly at the Princess Issena Hotel, Daytona Beach, Oct. 22-23. Presentations by out-of-state speakers will include:

Treatment of Reversible Uremia, Franklin H. Epstein, New Haven, Conn.
Management of Melanomas, Richard D. Brasfield, New York.
Various Types of Insulin and Their Use, Joseph T. Beardwood Jr., Philadelphia.
Congestive Heart Failure, Robert C. Batterman, New York.
Medical Complications of Pregnancy; Clinical Aspects of the Contracted Pelvis, Willis E. Brown, Little Rock, Ark.
Care of the Newborn, Thomas E. Bailey, Augusta, Ga.

The sessions will close with a clinicopathological conference by Dr. William W. Schildecker, Daytona Beach. A cocktail party, Saturday 6 p. m., will precede the annual banquet, at which the principal speaker, Dr. Frank G. Slaughter, Jacksonville, will have as his subject "Physician's Heritage."

ILLINOIS

Personal.—Dr. Harold C. Lueth, Evanston, has been promoted to the rank of brigadier general in the Army Reserve by the Illinois Military District, with headquarters in Chicago. He is currently commanding general of the 801st Medical Detachment (hospital center).

Diamond Jubilee.—The Winnebago County Medical Society celebrated its 75th anniversary on Oct. 11 at Rockford. Dr. Elmer Hess, Erie, Pa., President of the American Medical Association, appeared in a society-sponsored television program, "Let's Talk It Over," in the afternoon and in the evening addressed the members of the society and guests at the Forest Hills Country Club. Dr. Hess was the speaker at the noon meeting of the Kiwanis Club.

Chicago

Dallas B. Phemister Lecture.—Dr. Charles F. W. Illingworth, Regius Professor of Surgery, University of Glasgow, will deliver the second Dallas B. Phemister Lecture at the Billings Hospital Auditorium, 950 E. 59th St., Oct. 28, 8 p. m. The subject of his address will be recent research on peptic ulcer. The profession is invited.

Phi Beta Pi Lecture.—Theta chapter of Phi Beta Pi fraternity will sponsor its annual Stephen Walter Ranson Lecture at 4 p. m. Oct. 27 in Thorne Hall on the Northwestern University campus at Superior Street and Lake Shore Drive. Dr. John H. Lawrence, chief, Donner Laboratories, University of California, Berkeley, will discuss "Some Recent Investigations in Medicine."

Blatt Memorial Lecture.—The pediatric staff of the Cook County Hospital announces that the seventh annual Maurice Lamm Blatt Memorial Fund Lecture will be given Oct. 24, 8:30 p. m., in the Medical Amphitheater of the Cook County Hospital. Dr. Wolfgang W. Zuelzer, director of laboratories of the Children's Hospital, Detroit, will discuss "Maternal Fetal Incompatibility in the O-A-B System and Hemolytic Disease of the Newborn."

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Wilder Memorial Lecture.—The sixth William Hamlin Wilder Memorial Lecture of the Institute of Medicine of Chicago, an illustrated presentation, "Human Toxoplasmosis with Special Reference to Intraocular Inflammation," by Dr. Albert B. Sabin, professor of research pediatrics, University of Cincinnati College of Medicine, will be delivered at a joint meeting of the institute, the Chicago Society of Internal Medicine, and the Chicago Ophthalmological Society at the Drake Hotel, 8:15 p. m., Oct. 24. All are welcome. Telephone during the meeting, SUperior 7-2200. Preceding the meeting there will be cocktails at 6 p. m. followed by dinner ($5.75 per plate).

Mayo Memorial Lectures.—Prof. Erling Dahl-Iversen, professor of surgery, University of Copenhagen, Denmark, will deliver the Charles H. Mayo Memorial Lectures at Thorne Hall (Superior Street and Lake Shore Drive), Northwestern University Medical School. Prof. Dahl-Iversen, who is also chief of surgical services of the University Surgical Clinic at Rigshospitalet, Copenhagen, will address Chicago physicians and surgeons at 4 p. m. Oct. 26 on the functions of the endocrine organs during the postoperative period. The lectureships on surgery were instituted in 1931 by the late Dr. Charles H. Mayo, founder of the Mayo Clinics, who was graduated from Northwestern University Medical School in 1888.

Meeting on Cerebral Palsy.—"Trends in Cerebral Palsy Care and Treatment" will be the theme of a meeting sponsored by the United Cerebral Palsy Association of Illinois, United Cerebral Association of Chicago, Parents Association for Cerebral Palsy Children, and the Spastic Paralysis Aid Foundation on Oct. 29, 8:30 a. m., at the Spalding School, 1628 W. Washington Blvd. Trends in medical care will be discussed by Dr. Edward F. Lis, Research and Educational Hospitals, and trends in research by Dr. Glidden L. Brooks, national medical director, United Cerebral Palsy Association, New York. A tour of Spalding School will precede luncheon and the afternoon discussion groups. Parents of cerebral palsied children and interested professional persons are cordially invited. There is no registration fee.

MARYLAND

University News.—Dr. Samuel P. Bessman, director of biochemical research of the Research Foundation at Children's Hospital, Washington, D. C., has been appointed associate professor of pediatrics in the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.

Practitioners Meet in Baltimore.—The Maryland Academy of General Practice will hold its seventh annual scientific assembly at the Sheraton Belvedere Hotel in Baltimore Oct. 26-27. Dr. Merrill M. Cross, Silver Spring, president, will serve as toastmaster at the banquet Wednesday, 7 p. m., at which Mr. Mac F. Cahal, Kansas City, Mo., executive secretary, American Academy of General Practice, will be the speaker. Other out-of-state speakers include:

Walter A. L. Thompson, New York, Orthopedic Problems Encountered in General Practice.
Laurence L. Robbins, Boston, Roentgenology and the General Practitioner.
Elmer C. Bartels, Boston, Medical Treatment of Thyroid Disease.
Henry P. Laughlin, Washington, D. C., Psychiatry in General Practice.
George L. Kelly, Augusta, Ga., Problems of Libido and Potentia Encountered in General Practice.
Frederic D. Zeman, New York, General Therapeutic Considerations.
Murray B. Ferderber, Pittsburgh, Rehabilitation.
Austin I. Dodson, Richmond, Va., Treatment of Urinary Tract Infections.

MASSACHUSETTS

Meeting of Diabetes Association.—The New England Diabetes Association will meet Oct. 25, 8 p. m., in the Joslin Auditorium of the New England Deaconess Hospital, Boston. Herman B. Chase, Ph.D., professor of biology at Brown University, Providence, R. I., will speak on inherited insulin resistance in animals, and Dr. Russell J. Barrnett, assistant professor of anatomy at Harvard Medical School, Boston, will talk on histochemical demonstration of insulin.

MISSOURI

Ginsberg Memorial Seminar.—The first annual Dr. A. Morris Ginsberg Memorial Clinical Seminar, established in memory of the late clinical professor of medicine at the University of Kansas, will be held in the auditorium of the Menorah Medical Center, Kansas City, Oct. 27-29. Dr. Meyer Friedman, director, Brunn Cardiovascular Research Institute at Mount Zion Hospital, San Francisco, will lecture on "Functional and Cardiovascular Disease," "Studies in Digitalis Therapy," and "Cholesterol Metabolism" at 10 a. m. Thursday, Friday, and Saturday respectively. He will also lead the panel discussion on Hypertension, Thursday; Clinical Use of Digitalis, Friday; and Clinical Management of Coronary Arteriosclerosis, Saturday; each to be held at 11:30 a. m. A clinicopathological conference will take place at 2 p. m. Thursday, and a combined staff conference will be held at 9 a. m. Saturday. Daily ward rounds and informal discussions with the Menorah staff will be conducted by Dr. Friedman. Physicians in the Kansas City area are invited to participate.

NEBRASKA

Mid-West Clinical Society.—The Omaha Mid-West Clinical Society will hold its 23rd annual assembly Oct. 24-27 at the Hotel Paxton. A panel discussion on upper gastrointestinal hemorrhage is scheduled for Monday, 1:30 p. m. At the dinner, 6 p. m., Dr. Frank H. Bethell, Ann Arbor, Mich., will lead a discussion on hemorrhagic disorders. The Tuesday afternoon session will open with a panel discussion, "Treatment of Carcinoma of the Endometrium." Dr. Harold D. Palmer, Denver, will be leader for the Tuesday dinner discussion, "Malignant Lesions of the Abdomen and Pelvis in Infants and Children." The Wednesday afternoon panel discussion, 1:30 p. m., will be devoted to poisoning in children. The dinner discussion leader will be Dr. Francis L. Lederer, Chicago ("Adenoid and Tonsil Operations—To Be or Not to Be"). Panel discussion Thursday, 1:30 p. m., will be on treatment of cardiovascular problems. The dinner, 6 p. m., at which Dr. J. Scott Butterworth, New York, will lead the discussion about "Auscultation of the Heart—A Neglected Art," will be followed by an evening meeting, 7:30 p. m., at which Dr. Charles W. Mayo, Rochester, Minn., will have as his subject "The United Nations and the Role of Doctors and Medicine in International Relations."

NEW YORK

Sixth Wadsworth Lecture.—The sixth Augustus B. Wadsworth Lecture will be given at the division of laboratories and research, New York State Department of Health, Albany, Oct. 27, by Dr. John G. Kidd, professor of pathology, Cornell University Medical College, New York City, on "Immunological Approaches to the Problems of Cancer."

Personal.—The Samuel Sackett Foundation, which studies rheumatic fever and its related diseases, announces that Dr. Gene H. Stollerman, medical director of Irvington House in Irvington, has been appointed to direct rheumatic fever research in the department of medicine of Northwestern University Medical School, Chicago. The research program was made possible by the income from a $500,000 endowment providing for the research on a permanent basis.

New York City

Second Harvey Lecture.—Ernest F. Gale, director, Medical Research Council Unit for Chemical Microbiology, University of Cambridge, England, will deliver the second Harvey Lecture of the current series at the New York Academy of Medicine on Oct. 27 on "Nucleic Acids and Protein Synthesis."

Meding Award.—The Dr. Charles Bramman Meding award, granted annually to a person judged to have made an important contribution to the advancement of otolaryngology and/or ophthalmology, will be presented to Dr. Franz Altmann on Oct. 28 by the Harlem Eye and Ear Hospital. Dr. Altmann's film, "Embryology of the Ear," will be shown at the hospital auditorium coincident with the presentation of the award.

Symposium on Diabetes.—The third symposium on diabetes mellitus will be held Oct. 27 at the Memorial Center for Cancer and Allied Diseases, 410 E. 68th St., under the sponsorship of the Clinical Society of the New York Diabetes Association. The topic for discussion will be "The Pituitary-Adrenal System and Diabetes Mellitus." Out-of-state speakers include Dr. Carl F. Cori, St. Louis, Dr. Rachmiel Levine, Chicago, and Dr. E. Perry McCullagh, Cleveland. The sessions are open to physicians, medical students, and other professional personnel. Advance registration must be made through the New York Diabetes Association, 270 Park Ave., New York 17. There is no registration fee.

Assistant Medical Examiner Wanted.—The Department of Personnel, city of New York, is reopening applications for assistant medical examiner (office of the chief medical examiner). Persons who filed applications in March, 1954, are requested to bring their applications up to date. The salary range is from $8,200 to $10,300 a year, and the position offers pension, sick leave, and paid vacations. The minimum requirements are an M.D. degree from an accredited school; one year of formal appointment as intern in an approved general hospital; two years of training or full-time experience in gross and microscopic pathology in a laboratory of an approved university, morgue, or hospital, or a satisfactory equivalent; evidence, subject to official verification, of having performed 150 autopsies; and a valid New York State license to practice medicine. Applications, together with the $5 fee, will be accepted to 4 p. m., Oct. 26, at the Department of Personnel, 96 Duane St., New York 7. A request for application by mail must be accompanied by a 9 in., self-addressed envelope, stamped 6 cents for return.

NORTH CAROLINA

Annual Symposium at Raleigh.—The seventh annual medical and surgical symposium of the Raleigh Academy of Medicine will be held Oct. 27 at the Sir Walter Hotel in Raleigh, beginning at 9:30 a. m. and terminating with an after-dinner address. The following program will conclude with panel discussion by all participants:

Hypertensive Toxemias of Pregnancy, Leon C. Chesley, Ph.D., State University of New York College of Medicine, Brooklyn.
Medical Diseases Complicated by Pregnancy, Alvin J. B. Tillman, Columbia University College of Physicians and Surgeons, New York.
Vaginitis and Vulvovaginitis, C. P. Jones, M.T., consulting bacteriologist, Duke Hospital, Durham.
Vaginal Hysterectomy, Edward D. Allen, Chicago.
Developmental Picture of Carcinoma of the Cervix, Cyrus C. Erickson, University of Tennessee College of Medicine, Memphis.

Dr. Robert A. Kimbrough, Philadelphia, will moderate the program and the panel discussion and will deliver the after-dinner address, "Carcinoma of the Cervix." All physicians are cordially invited to attend the symposium, the cocktail hour, and the dinner as guests of the academy.

OHIO

Course on Gastroenterology.—The Frank E. Bunts Educational Institute, Cleveland, announces a postgraduate continuation course, "Newer Developments in Gastroenterology," Oct. 26-27, including discussions of the surgical and medical aspects of gastrointestinal diseases; demonstrations of the newer roentgenographic techniques used in diagnosis of hiatus hernia, jejunal ulcer, diverticulum, and papilla of the colon, with special attention to intravenous cholangiography; and a practical demonstration of laboratory procedures. Information may be obtained from the Secretary of the Frank E. Bunts Educational Institute, 2020 E. 93rd St., Cleveland 6.

OKLAHOMA

Personal.—The citizens of Blair and the surrounding area held an all-day celebration in tribute to Dr. Robert Z. Taylor on his 71st birthday. Dr. Taylor has been practicing in Blair since 1909.

Meeting of Clinical Society of Oklahoma City.—The 25th annual conference of the Oklahoma City Clinical Society will convene Oct. 24-27 at the Biltmore Hotel. Dr. Elmer Hess, Erie, Pa., President, American Medical Association, will deliver the banquet address Monday. Other guest lecturers are: Drs. James H. Allen and Theodore A. Watters, New Orleans; Edward P. Cawley, Charlottesville, Va.; Richard V. Ebert, Little Rock, Ark.; Keith S. Grimson, Durham, N. C.; John R. Hannan, Cleveland; Arild E. Hansen, Galveston, Texas; Carl P. Huber and Edward B. Smith, Indianapolis; Raymond J. Jackman, Rochester, Minn.; Emanuel M. Papper, New York; Homer E. Prince, Houston, Texas; Clyde L. Randall, Buffalo; Lowell A. Rantz, San Francisco; Dana M. Street, Memphis, Tenn.; and Everett D. Sugarbaker, Jefferson City, Mo. The sessions will include a clinicopathological conference, general assembly, round-table luncheons, a smoker, and dinner meetings. The registration fee of $20 includes all these features. For information address: Executive Secretary, 503 Medical Arts Bldg., Oklahoma City.

PENNSYLVANIA

Medical Examiner System.—As the final step in establishing the medical examiner system in Philadelphia, where nonmedical personnel have previously held the post of coroner, the Philadelphia Department of Public Health has announced plans to fill the position of medical examiner with a physician trained in pathology and forensic medicine. Recent legislation of the Philadelphia City Council defined the post as one responsible to the department of public health and enabled the health department itself to set the requirements for Civil Service appointment to the position.

Philadelphia

Geriatrics Conference.—The Home for the Jewish Aged, 5301 Old York Rd., will sponsor the first annual medical symposium on clinical aspects of the aging process, with special reference to neurology, psychiatry, nutrition, and cardiology, Oct. 23, 10 a. m.-4 p. m. Dr. Nathan Blumberg, medical director of the home, will serve as chairman. The following panels will be presented: (1) Neurology and Psychiatry, Drs. Matthew T. Moore and Maurice E. Linden, Philadelphia, and Abraham M. Rabiner, Brooklyn, N. Y.; (2) Nutrition, Drs. Robert S. Goodhart, New York, Donald M. Watkin, Staten Island, N. Y., and Hertha K. Sorter, Chicago; and (3) Cardiology, Drs. James B. Donaldson, Philadelphia, Raymond Harris, Albany, N. Y., and Simon Dack, New York. Luncheon will be served at 1 p. m. Physicians are cordially invited.

Pemberton Lecture on Rheumatoid Disease.—The fifth annual Dr. Ralph Pemberton Memorial Lecture, "The Nature of Rheumatoid Disease," will be delivered by Dr. Metro A. Ogryzlo, assistant professor of medicine, University of Toronto Faculty of Medicine, Toronto, Canada, under the sponsorship of the eastern Pennsylvania chapter of the Arthritis and Rheumatism Foundation and the Philadelphia Rheumatism Society Oct. 27, 8:30 p. m., at the Philadelphia County Medical Society, 301 S. 21st St. A reception and dinner (subscription $6) will be held at 6 p. m. Physicians may place reservations through Dr. William J. Somerville, Chairman, % Arthritis and Rheumatism Foundation, John Bartram Hotel, Philadelphia 7. Formal credits will be allowed for the lecture by the Academy of General Practice. The public is invited.

VERMONT

New Department of Preventive Medicine.—The University of Vermont College of Medicine, Burlington, announces the Commonwealth Fund of New York City has approved a project for the establishment of a new department of preventive medicine and for the development of a Regional Medical Needs Project. The project is to run four years, beginning Feb. 1, 1956. Dr. Leon R. Lezer, assistant professor of preventive medicine at the college, is chairman of the 16-member committee, formed to consider the rural medical needs of Maine, New Hampshire, and Vermont. The new department, consisting of a sociologist, medical social worker, public health nurse, health educator, statistician, and secretarial help, will be "the nucleus that will develop a teaching program in comprehensive medical care." It will also be a primary function of the staff to "act as consultants on request to rural areas in Maine, New Hampshire, and Vermont in studying local medical needs."

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Serving on the committee with Dr. Lezer are commissioners of health, medical society officers, and members of medical college faculties from Vermont, New Hampshire, and Maine.

WEST VIRGINIA

Personal.—Dr. Ralph W. Ryan, Morgantown, has accepted appointment as civilian consultant in ophthalmology to the National Institutes of Health at Bethesda, Md., where he will do research in the control of eye diseases. He will, however, continue the practice of his specialty in Morgantown.

State Medical Election.—Dr. Athey R. Lutz, Parkersburg, was recently elected president of the West Virginia State Medical Association; Dr. E. Lyle Gage, Bluefield, first vice-president (reelected); Dr. Charles A. Hoffman, Huntington, second vice-president; and Dr. T. Maxfield Barber, Charleston, treasurer (reelected). The next annual meeting will be held at the Greenbrier Aug. 23-25, 1956.

WISCONSIN

Course on Radioisotopes.—A course for nonradiologists on the application of radioisotopes in clinical medicine is being offered on four consecutive Thursday afternoons, beginning Oct. 20, 10 a. m., at Marquette University School of Medicine, Milwaukee. The course is under the direction of Dr. Irving I. Cowan, director of the department of isotopes and assistant clinical professor of radiology. Tuition is $20 for the eight-hour course.

GENERAL

Meeting of Industrial Council.—At its annual meeting at the Rensselaer Polytechnic Institute in Troy, N. Y., Oct. 27-29, the Industrial Council, a national forum of educators and American industry, will have as its subject "The Pharmaceutical Industry." The principal speakers will include Pierre A. deTarnowsky, Mead Johnson & Company, Evansville, Ind.; Dr. Theodore G. Klumpp, Winthrop-Stearns, Inc., New York; Dr. Raymond M. Rice, Eli Lilly and Company, Indianapolis; and Ernest H. Volwiler, Ph.D., Abbott Laboratories, North Chicago, Ill.

Western Psychiatric Convention.—The first Western Divisional Meeting of the American Psychiatric Association will be held in San Francisco Oct. 27-30 as a joint meeting with the West Coast psychoanalytic societies. Papers on psychosomatic medicine, psychophysiological response to stress, use of reserpine and chlorpromazine, child psychiatry, group therapy, and teaching of psychiatry have been scheduled. Dr. William G. Barrett, San Francisco, president-elect, American Psychoanalytic Association, will give the academic lecture. The Northern California Psychiatric Society is the host society of the convention. Its newly elected officers are: Dr. Alfred Auerback, San Francisco, president; Dr. William R. Sheehy, Berkeley, vice-president; and Dr. Thomas A. Gonda, San Francisco, secretary-treasurer.

Association of Medical Colleges.—The 66th annual meeting of the Association of American Medical Colleges will be held at the New Ocean House, Swampscott, Mass., Oct. 24-26. The meeting will open Monday with the introduction of new deans. Reports on experiments in medical education will be made Monday and Tuesday afternoons. The following symposium on compensation of faculties of clinical departments will be presented Wednesday morning:

The Full-Time Plan at the University of Chicago, Lowell T. Coggeshall, Chicago.
The Private Diagnostic Clinic at Duke University, Wilburt C. Davison, Durham, N. C.
The University of Virginia Plan, Thomas H. Hunter, Charlottesville, Va.
The University of Iowa Plan, Norman B. Nelson, Iowa City.
The Harvard University Plan, George Packer Berry, Boston.

Meeting of Parenteral Drug Association.—The Parenteral Drug Association will hold its annual meeting Oct. 25-27 at the Hotel New Yorker in New York City. The sessions will open with "Changes Made in the U. S. P. XV Affecting Parenterals" by Lloyd C. Miller, Ph.D., U. S. Pharmacopeia, New York. "Physician Preference in Types of Parenteral Products" will be discussed by Dr. Herbert S. Kupperman, New York University College of Medicine, New York. Dr. Arnold J. Lehman, Food and Drug Administration, Washington, D. C., will present "Pharmacological Testing of New Parenterals." Round-table discussions have been scheduled on the U. S. P., 15th revision, sterility tests and on a program of collaborative research. Dr. Austin Smith, Editor of THE JOURNAL, guest of honor and speaker at the banquet, will discuss "Trends in Drug Evaluation."

Meeting of Gastroenterologists.—The second annual convention of the American College of Gastroenterology Oct. 24-26 at the Shoreland Hotel, Chicago, will be followed by a course in postgraduate gastroenterology Oct. 27-29. Attendance at the course will be limited to those who have paid the matriculation fee. Dr. Lynn A. Ferguson, Grand Rapids, Mich., president, will preside over the first scientific session Monday morning. Dr. Martin E. Rehfuss, Philadelphia, will be the speaker at the luncheon, 12:30 p. m. Monday (sponsored by Burton, Parsons & Company; admission by card only). Tuesday at 2 p. m. Dr. Clifford J. Barborka, Chicago, will moderate a panel discussion on peptic ulcer. Participants include Dr. H. Marvin Pollard, Ann Arbor, Mich., and Drs. Robert B. Lewis, E. Clinton Texter Jr., and Walter W. Carroll, all of Chicago. The banquet will be held at 7:30 p. m. Tuesday. More than 29 invited speakers will participate in the scientific sessions.

Anesthesiologists Meet in Boston.—The American Society of Anesthesiologists will hold its annual session at the Hotel Statler, Boston, Oct. 29-Nov. 2. The sessions will open Monday morning with panel symposiums on the endocrine factors in response to anesthesia and surgery. Other panel symposiums will include "The Effects of Anesthetics on the Circulatory Dynamics," "Hypothermic Anesthesia," "What Are the Causes of Death Relative to Anesthesia and Surgery?" and "What Influence Does the Anesthetic Agent Have on the Mortality Rate?" Monday at 8 p. m. there will be an informal meeting to discuss problems related to electroencephalography in anesthesia and to show records of the current investigations in this field. At a historical session Wednesday morning Dr. Albert M. Betcher, New York, will present "The Jubilee Year of Organized Anesthesia," and Dr. F. A. Duncan Alexander, Iowa City, will have as his topic, "James Leonard Corning and the Origins of Spinal Analgesia and Anesthesia."

Symposium on Tuberculosis in Childhood.—The National Jewish Hospital, Denver, will present a Symposium on Tuberculosis in Infancy and Childhood Nov. 9-13. No registration fee will be required. Applications will be considered in order of their receipt by the executive chairman, Dr. Gardner Middlebrook, Denver. Dr. Rene J. Dubos, New York, moderator for the opening session, will present "The Problem," which will be followed by "Historical Comments" by Dr. Bela Schick, New York, and "Morphology of Tuberculous Lesions" by Dr. Kornel L. Terplan, Buffalo. Some 24 presentations will be made, including:

Immunopathology of Tuberculosis, Sidney Raffel, Menlo Park, Calif.
Dynamics of Antituberculous Chemotherapy, Walsh McDermott, New York.
Unusual Cases of Tuberculosis, Ralph V. Platou, New Orleans.
Clinical Aspects of the Natural History of Tuberculosis in Infants and Children, Edith H. Lincoln, New York.
Correlation of in Vitro Sensitivity of M. Tuberculosis with Clinical Response of Patient to Therapy, Hattie E. Alexander, New York.
Management of Special Problems in the Chemotherapy of Tuberculosis in Infants and Children, Jose E. Sifontes, Syracuse, N. Y.

Annual Session on Surgery of Trauma.—The American Association for the Surgery of Trauma will hold its 15th annual session Oct. 27-29 at the Drake Hotel, Chicago. The closing presentation, the presidental address by Dr. Robert H. Kennedy, New York, will be preceded by a symposium (Discussion of Disability Evaluation by Members of the Disability Evaluation Committee of the American Medical Association), presented by Drs. Alexander P. Aitken, Brookline, Mass.; Alfred H. Whittaker, Detroit; Henry H. Kessler, Newark, N. J. (by invitation); and Earl D. McBride, Oklahoma City (by invitation). The program of 40 papers includes 39 invited participants. A cocktail hour at 7 p. m. Friday will precede the annual banquet (black tie preferred), at which Dr. Eric Oldberg, professor of neurology,

and neurological surgery, University of Illinois College of Medicine, Chicago, will have as his topic "Inside a Symphony Orchestra." Dr. Oldberg is president of the Chicago Orchestral Association. Ladies and guests are invited to the annual dinner.

Congress of Neurological Surgeons.—The fifth annual meeting of the Congress of Neurological Surgeons will convene at the Hotel Statler, Los Angeles, Oct. 27-29. Dr. Carl W. Rand, University of Southern California School of Medicine, Los Angeles, will present "Notes on Pituitary Tumors," "Histological Changes of the Injured Brain with Clinical Applications," and "Brain Tumors Complicating Pregnancy and Spontaneous Subarachnoid Hemorrhage Occurring in Noneclamptic Pregnancy." Other guest speakers are: Dr. H. Russell Meyers, Iowa City; Dr. John E. Webster, Detroit; Dr. William H. Sweet, Boston; Dr. Cyril B. Courville, Dr. Johannes M. Nielsen, Dr. Lawrence H. Arnstein, Dr. Richard A. Koons, and Horace W. Magoun, Ph.D., Los Angeles; and Dr. Robert H. Pudenz, Dr. James G. Golseth, and Anthonie Van Harreveld, Ph.D., Pasadena, Calif. Dr. Golseth will conduct a postgraduate course on electromyography on Wednesday. Symposiums have been scheduled on neurophysiology, carotid artery thrombosis, and hypothermia and hibernation in neurosurgery. The banquet Thursday will be preceded by cocktails, 6:30 p. m. On Oct. 31 the congress will hold a joint meeting with the Sociedad Mexicana de Cirugia Neurologica in Mexico City, where a symposium will be presented on cysticercosis of the central nervous system.

Meeting of Gerontological Society.—The eighth annual meeting of the Gerontological Society will be held in the Sheraton-Belvedere Hotel, Baltimore, Oct. 27-29. Dr. Frederic D. Zeman, New York, will serve as chairman for the first general session Thursday morning, which will have as its topic "Basic Considerations—Medical and Social Problems of the Aging and the Aged." Dr. Edward L. Bortz, Philadelphia, will be chairman of the second general session, Friday morning, when the subject will be "Whither Gerontology? Current Research Needs." The section on clinical medicine will meet jointly with the Maryland Academy of General Practice Thursday afternoon to discuss "Everyday Problems in the Care of the Elderly." Friday afternoon that section will hold a joint meeting with the Commission on Chronic Illness to consider "Old Age and Chronic Illness." Thursday afternoon staff members of the National Institute of Mental Health, National Institutes of Health, Bethesda, Md., will present a symposium, "The National Institute of Mental Health and Problems of Aging," for the section on psychological and social sciences. The society will be guests of the Medical and Chirurgical Faculty of the State of Maryland and the Baltimore City Medical Society at an evening session Thursday, at which an address, "Education for Gerontology," will be delivered by Dr. Frederick C. Swartz, East Lansing, Mich.

Gulf Coast Clinical Society.—The Gulf Coast Clinical Society, composed of physicians from southern Alabama, southern Mississippi, and northwest Florida, will hold its 15th annual meeting at the San Carlos Hotel, Pensacola, Fla., Oct. 27-28. Presentations by out-of-state speakers include:

Mechanism of Action of the Antibiotic Drugs, John C. Krantz Jr., Baltimore.
Gyne-Chiatry, William K. Keller, Louisville, Ky.
Fever of Unknown Origin, Max Michael Jr., New York.
Angiocardiography, Jarrell E. Miller, Dallas, Texas.
Tumors Primary in the Neck, Grant E. Ward, Baltimore.
Mechanisms Responsible for Recurrent Bronchopulmonary Infection, Edwin R. Levine, Chicago.
New Light on the Etiology of Gastric and Duodenal Ulcer, Lester R. Dragstedt, Chicago.

At luncheon, Thursday 12:30 p. m., Drs. Ward, Levine, and Krantz will conduct a round-table discussion, "Etiology and Treatment of Bronchiogenic Carcinoma." A cocktail party, 6:30 p. m., will precede the banquet at the Pensacola Country Club (courtesy of Van Antwerp's Surgical Supply, Inc., Mobile, Ala.). The sessions will end with the presentation of a clinicopathological conference Friday, 11:20 a. m., by Drs. Michael, Dragstedt, and Miller, and Dr. W. A. D. Anderson, professor of pathology, University of Miami School of Medicine, Coral Gables, Fla.

Surgeons Meet in Chicago.—The American College of Surgeons will hold its clinical congress Oct. 31-Nov. 4 at the Conrad Hilton Hotel, Chicago. Panel discussions will be held on surgery of the thyroid, parenteral therapy, carcinoma of the breast, surgery in patients with cardiac disease, surgery and anesthesia, benign lesions of the pancreas, and surgery of the colon. The Monday afternoon session will open with a clinicopathological conference. During the general sessions, symposiums will be presented on trauma, cancer, new or unusual problems in surgery, and graduate training in surgery and the surgical specialties. The general sessions will close with a discussion "What's New in Surgery?" based on papers presented during the forum on Fundamental Surgical Problems. The 10th Martin Memorial Lecture, "Current Dilemmas of Doctors and Others," will be delivered Monday evening by Grayson L. Kirk, Ph.D., New York, president of Columbia University. The oration on trauma will be made Thursday afternoon by Dr. Frank B. Berry, Washington, D. C., assistant secretary of defense, whose subject will be "Mass Casualties." Dr. Warren H. Cole, Chicago, will be installed as president of the college on Friday evening, when he will speak on "Surgical Philosophy Old and New." During the congress, operations performed at the University of Illinois Research and Educational Hospitals will be televised in color. Questions from the audience will be relayed to, and answered by, the operating team, while the operation is in progress.

Society News.—Newly elected officers of the **American Association of Railway Surgeons** include Dr. Richard A. Sutter, St. Louis, president; Dr. Harold A. Spilman, Ottumwa, Iowa, president-elect; Drs. Joseph F. Prinzing, Denver, Ernest Colli, New Orleans, and Lloyd A. Hamilton, Lambertville, N. J., vice-presidents; Dr. Theodore L. Hansen, Chicago, treasurer; Dr. Chester C. Guy, Chicago, secretary; Dr. James K. Stack, Chicago, recorder; and Mr. H. S. Dewhurst, Chicago, assistant secretary-treasurer.——Officers of the newly organized **Society for Research on the Reticuloendothelial System** include: Dr. Charles A. Doan, Columbus, Ohio, president; Dr. Leon O. Jacobson, Chicago, vice-president; and Dr. John H. Heller, Ridgefield, Conn., executive secretary. Members of the group are specialists in internal medicine, microbiology, endocrinology, immunology, nutrition, and radiology. The membership represents more than 100 institutions of learning and hospitals in the United States, Europe, South America, and the Middle East. Its national headquarters are in Ridgefield, Conn.——The **American Board of Clinical Chemistry, Inc.,** which held its annual meeting at Henry Ford Hospital, Detroit, May 20-21, announces that a complete Directory of Certified Clinical Chemists, obtainable from the secretary-treasurer, Dr. Oliver H. Gaebler, Henry Ford Hospital, Detroit 2, will be sent without charge to hospital departments or other laboratories that engage in clinical chemistry.——William H. Feldman, D.V.M., Rochester, Minn., has been elected chairman of the advisory medical board of the **Leonard Wood Memorial (American Leprosy Foundation),** succeeding Dr. Howard T. Karsner, Washington, D. C., who has been made a special consultant to the board. Other new members of the board are Dr. Fred L. Soper, Washington, D. C., director, Pan American Sanitary Bureau; Dr. Thomas B. Turner, Baltimore; and Dr. Thomas H. Weller, Boston.——Newly elected officers of the **American College of Chest Physicians** include: Dr. James H. Stygall, Indianapolis, president; Dr. Herman J. Moersch, Rochester, Minn., president-elect; Dr. Burgess L. Gordon, Philadelphia, first vice-president; Dr. Donald R. McKay, Buffalo, second vice-president; Dr. Charles K. Petter, Waukegan, Ill., treasurer; and Dr. Albert H. Andrews, Chicago, assistant treasurer. The next annual meeting will be held at the Sherman Hotel, Chicago, June 7-10, 1956.——At the annual meeting of the **Aero Medical Association** Dr. Kenneth E. Dowd, Montreal, Canada, was elected president; Dr. Jan H. Tillisch, Rochester, Minn., president-elect; Capt. Ashton Graybiel (MC), U. S. N., Pensacola, Fla., first vice-president, to succeed Dr. Tillisch as president-elect next year; Dr. Thomas H. Sutherland, Marion, Ohio, secretary-treasurer (reelected). The official history of the association, titled "Doctors in the Sky" by Dr. Robert J. Benford, Washington, D. C., was publicly released on the first day of the meeting. The following awards were made during the convention: Theodore C. Lyster

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award for achievement in the general field of aviation medicine to Gen. Otis O. Benson Jr., Washington, D. C.; the Raymond F. Longacre award to Dr. Roy R. Grinker, Chicago; and the Arnold D. Tuttle award to Fred A. Hitchcock, Ph.D., Columbus, Ohio. The 27th annual meeting of the association will be held at the Drake Hotel in Chicago, April 16-18, 1956.—— At the annual meeting of the **United States-Mexico Border Public Health Association** in Mexico City, the following officers were elected for 1956: Mr. George W. Marx, Phoenix, Ariz., president; Dr. Guillermo Soberanes, Hermosillo, Sonora, president-elect; Dr. Esteban de Essesarte, Agua Prieta, Sonora; Dr. Austin W. Matthis, El Centro, Calif., vice-president; and Dr. Sidney B. Clark, El Paso, Texas, secretary-treasurer.

FOREIGN

Symposium on Vitamin B_{12}.—Plans are being made for the first European symposium on vitamin B_{12} to be held the last week of May, 1956, in Hamburg, Germany. The physiology and the clinical application of vitamin B_{12} in human and veterinary medicine will be discussed. For information, write to Doz. Dr. H. Bauer, Nervenklinik, Hamburg-Eppendorf, Germany.

International Professional Union.—At a meeting in Paris, France, in June the official delegates of the National Professional Societies of Gynecologists and Obstetricians of the World founded the International Professional Union, of which Prof. Jean Ravina, Paris, is president, succeeding the president-founder, Dr. Maurice Fabre of Paris. The next international meeting will be in Madrid, Spain, Sept. 28-29, 1956. For information write to the secretary-general, Dr. Jacques Courtois, 1 rue Racine, St.-Germain-en-Laye (S. & O.), France.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

NATIONAL MEDICAL PUBLIC RELATIONS CONFERENCE, Hotel Statler, Boston, Nov. 28. Mr. Leo F. Brown, 535 N. Dearborn St., Chicago 10, Director.

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 3-8. Dr. James R. Webster, 55 East Washington St., Chicago 2, Secretary.

AMERICAN ACADEMY OF NEUROLOGICAL SURGERY, The Homestead, Hot Springs, Va., Oct. 27-29. Dr. Eben Alexander Jr., Bowman Gray School of Medicine, Winston-Salem, N. C., Secretary.

AMERICAN ACADEMY OF OBSTETRICS AND GYNECOLOGY, Conrad Hilton Hotel, Chicago, Dec. 13. Dr. C. Paul Hodgkinson, 116 South Michigan Blvd., Chicago, Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, Palmer House, Chicago, Nov. 19-21. Miss Marjorie Saunders, 3707 Gaston Ave., Dallas 10, Texas, Secretary.

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Curtis Hotel, Minneapolis, Nov 4-6. Dr. Edwin P. Jordan, Box 58, Charlottesville, Va., Executive Director.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Drake Hotel, Chicago, Oct. 27-29. Dr. James K. Stack, 700 N. Michigan Blvd., Chicago 11, Secretary.

AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION, The Homestead, Hot Springs, Va., Oct. 31-Nov. 2. Dr. M. N. Fulton, 124 Waterman St., Providence 6, R. I., Secretary.

AMERICAN COLLEGE OF ANESTHESIOLOGISTS, Hotel Statler, Boston, Nov 4-5. Mr. John H. Hunt, 188 West Randolph St., Chicago 1, Executive Secretary.

AMERICAN COLLEGE OF CARDIOLOGY INTERIM MEETING, Hotel Claridge, Memphis, Tenn., Nov. 10-12. Dr. Philip Reichert, Empire State Bldg., New York 1, Secretary.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Hotel Shoreland, Chicago, Oct. 24-26. Dr. Joseph Shaiken, 33 West 60th St., New York 23, Secretary.

AMERICAN COLLEGE OF SURGEONS, Conrad-Hilton Hotel, Chicago, Oct. 31-Nov. 4. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Secretary.

AMERICAN LEAGUE AGAINST EPILEPSY, Roosevelt Hotel, New York, Dec. 8. Dr. Peter Kellaway, Baylor University College of Medicine, Houston 25, Tex., Secretary.

AMERICAN MEDICAL WOMEN'S ASSOCIATION, Board Meeting, Netherlands-Plaza Hotel, Cincinnati, Nov. 11-13. Miss Lillian T. Majally, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION, Muehlebach Hotel and Municipal Auditorium, Kansas City, Mo., Nov. 14-18. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN SCHOOL HEALTH ASSOCIATION, Hotel President, Kansas City, Mo., Nov. 14-18. Dr. A. O. DeWeese, 515 East Main St., Kent, Ohio, Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Hotel Statler, Boston, Oct. 29-Nov. 3. Dr. J Earl Remlinger Jr., Room 1101, 188 W. Randolph St., Chicago 1, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF ARTERIOSCLEROSIS, Hotel Sheraton, Chicago, Nov. 6-7. Dr. O. J. Pollak, P.O. Box 228, Dover, Del., Secretary.

AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Somerset Hotel, Boston, Nov. 2-5. Dr. John E. Larsh Jr., Dept. of Parasitology, School of Public Health, Chapel Hill, N. C., Secretary.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES, New Ocean House, Swampscott, Mass., Oct. 24-26. Dr. Dean F. Smiley, 185 N. Wabash Ave., Chicago 1, Secretary.

ASSOCIATION OF MILITARY SURGEONS OF THE U. S., Hotel Statler, Washington, D. C., Nov. 7-9. Colonel Robert E. Bitner, 1726 1 St. N.W., Washington 6, D. C., Secretary.

ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASES, Hotel Roosevelt, New York, Dec. 9-10. Dr. Clarence C. Hare, 710 West 168th St., New York 32, Secretary.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS, Hotel Washington, Washington, D. C., Nov. 6-12. Dr. Franklin D. Yoder, State Board of Health, Cheyenne, Wyo., Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel, Chicago, Nov. 4-5. Dr. Robert H. Ebert, 950 East 59th St., Chicago 37, Secretary.

CONGRESS OF NEUROLOGICAL SURGEONS, Hotel Statler, Los Angeles, Oct. 27-29. Dr. Philip D. Gordy, 1007 Delaware Ave., Wilmington, Del., Secretary.

EASTERN SECTION, AMERICAN FEDERATION FOR CLINICAL RESEARCH, Hotel Warwick and College of Physician's Building, Philadelphia, Dec. 2-3. Dr. Charles R. Shuman, Temple Univ. Hospital, Broad and Ontario Sts., Philadelphia 40, Chairman.

GERONTOLOGICAL SOCIETY, Sheraton-Belvedere Hotel, Baltimore, Oct. 27-29. Dr. Nathan W. Shock, Baltimore City Hospitals, Baltimore 24, Secretary.

GULF COAST CLINICAL SOCIETY, Pensacola, Fla., Oct. 27-28. Dr. Barkley Beidleman, 1750 N. Palafox St., Pensacola, Fla., Secretary.

INTER-SOCIETY CYTOLOGY COUNCIL, Statler Hotel, Cleveland, Nov. 11-12. Dr. Paul F. Fletcher, 634 N. Grand Blvd., St. Louis 3, Secretary.

INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, Municipal Auditorium, Milwaukee, Nov. 14-17. Mr. Roy T. Ragatz, 207 Gay Bldg., Madison 3, Wis., Executive Director.

MEDICAL SOCIETY EXECUTIVES CONFERENCE, Parker House, Boston, Nov. 27. Mr. H. Martin Baker, 1102 South Hillside, Witchita 17, Kansas, Secretary.

MIDWESTERN SECTION OF AMERICAN FEDERATION FOR CLINICAL RESEARCH, Thorne Hall, Northwestern University, and Drake Hotel, Chicago, Nov. 3. Dr. Robert J. Glaser, Barnes Hospital, St. Louis 10, Secretary.

NATIONAL ASSOCIATION FOR MENTAL HEALTH, Indianapolis, Nov. 4-6. Mr. Robert M. Heininger, 1790 Broadway, New York 19, Director.

NEW ENGLAND HEALTH EDUCATION ASSOCIATION, Boston, Dec. 2. Miss Wyntha Tompkins, Middlesex Health Association, Essex, Mass., Secretary.

OKLAHOMA CITY CLINICAL SOCIETY CONFERENCE, Oklahoma City, Oct. 24-27. Dr. Charles E. Leonard, 512 Medical Arts Bldg., Oklahoma City 2, Secretary.

OMAHA MID-WEST CLINICAL SOCIETY, Hotel Paxton, Omaha, Oct. 24-27. Mrs. Anne K. Ramsey, 1031 Medical Arts Bldg., Omaha 2, Executive Secretary.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Dec. 7-11. Dr. Luis R. Guzman-Lopez, Box 9111, Santurce, Secretary.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Palmer House, Chicago, Dec. 11-16. Dr. Donald S. Childs, 713 E. Genesee St., Syracuse 2, N. Y., Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

Louisville, Ky., Nov. 5. Dr. Sam A. Overstreet, 332 West Broadway, Louisville, Ky., Governor.

Newark, N. J., Nov. 9. Dr. Edward C. Klein Jr., 6 S. Kingsman Rd., South Orange, N. J., Governor.

DETROIT, Dec. 3. Dr. H. Marvin Pollard, 1313 East Ann St., Ann Arbor, Mich., Governor.

HOT SPRINGS, ARK., Dec. 3. Dr. A. A. Blair, 100 S. 14th St., Ft. Smith, Ark., Governor.

WINSTON-SALEM, N. C., Dec. 8. Dr. Elbert Persons, Duke Hospital, Durham, N. C., Governor.

SOCIETY OF CLINICAL SURGERY, Hotel Roosevelt, New Orleans, Nov. 11-12. Dr. Frank F. Allbritten Jr., University of Kansas Medical Center, Kansas City, Mo., Secretary.

SOUTHERN MEDICAL ASSOCIATION, Shamrock Hotel, Houston, Texas, Nov. 14-17. Mr. V. O. Foster, 1020 Empire Bldg., Birmingham 3, Ala., Secretary-Manager.

SOUTHERN SOCIETY OF CANCER CYTOLOGY, Houston, Texas, Nov. 14-17. Dr. J. Ernest Ayre, 1155 N.W. 14th St., Miami, Fla., Secretary.

SOUTHERN SURGICAL ASSOCIATION, The Homestead, Hot Springs, Va., Dec. 6-8. Dr. George G. Finney, 2947 St. Paul St., Baltimore 18, Secretary.

SOUTHWESTERN MEDICAL ASSOCIATION, Westward Ho Hotel, Phoenix, Ariz., Nov. 16-18. Dr. Celso C. Stapp, 800 Montana St., El Paso, Texas, Secretary.

STATE MEDICAL JOURNAL CONFERENCE, Chicago, Nov. 7-8. Mr. Alfred J. Jackson, 535 N. Dearborn St., Chicago 10, Director.

THE CONSTANTINIAN SOCIETY, Sheraton-Park Hotel, Washington, D. C., Oct. 26-29. Dr. C. F. Shook, P. O. Box 1035-36, Toledo 1, Ohio, Secretary.

WESTERN ORTHOPEDIC ASSOCIATION, The Reef, Honolulu, Hawaii, Nov. 7-10. Dr. Ivar J. Larsen, 1133 Punchbowl, Honolulu 13, Hawaii, Secretary.

WESTERN SOCIETY OF ELECTRO-ENCEPHALOGRAPHY, Westward Ho Hotel, Phoenix, Ariz., Nov. 10-12. Dr. Sylvester N. Berens, 902 Boren Ave., Seattle, Secretary.

WESTERN SURGICAL ASSOCIATION, Olympic Hotel, Seattle, Dec. 1-3. Dr. John T. Reynolds, 612 N. Michigan Blvd., Chicago 11, Secretary.

FOREIGN AND INTERNATIONAL

CONFERENCE OF INTERNATIONAL UNION FOR HEALTH EDUCATION OF THE PUBLIC, Rome, Italy, Apr. 27-May 5, 1956. Mr. Lucien Viborel, 92 rue St. Denis, Paris 1er, France, Secretary-General.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LIMNOLOGY, Helsinki, Finland, July 26-Aug. 7, 1956. For information address: Dr. H. Luther, Snellmansgatan 16 C 36, Helsinki, Finland.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LOGOPEDICS AND PHONIATRICS, Barcelona, Spain, Sept. 3-7, 1956. Dr. J. Perello, Provenza 319, Barcelona 9, Spain, Secretary-General.

CONGRESS OF INTERNATIONAL SOCIETY OF HEMATOLOGY, Hotel Statler, Boston, Mass., U.S.A., Sept. 3-8, 1956. Dr. W. C. Moloney, 39 Bay State Road, Boston, Mass., U.S.A., Secretary.

CONGRESS OF INTERNATIONAL SOCIETY FOR RESEARCH ON ANESTHESIA, Miami Beach, Fla., U.S.A., Mar. 12-15, 1956. For information write: Dr. R. J. Whitacre, 13951 Terrace Road, Cleveland 12, Ohio, U. S. A.

CONGRESS OF LATIN SOCIETY OF OPHTHALMOLOGY, Madrid, Spain, April 24-28, 1956. For information address: Dr. Costi, Montalban 3, Madrid, Spain.

EUROPEAN CONGRESS OF ALLERGOLOGY, Florence, Italy, May 1956. Prof. Umberto Serafini, Largo della Gancia 5, Rome, Italy, Secretary-General.

EUROPEAN CONGRESS OF CARDIOLOGY, Stockholm, Sweden, Sept. 10-12, 1956. Dr. Karl Erik Grewin, Sodersjukhuset, Stockholm, Sweden, General Secretary.

EUROPEAN SYMPOSIUM ON VITAMIN B_{12}, Hamburg, Germany, May 1956. For information write: Doz. Dr. H. Bauer, Nervenklinik. Hamburg-Eppendorf, Germany.

INTERNATIONAL ACADEMY OF PATHOLOGY, Cincinnati, Ohio, U. S. A., April 24-25, 1956. Dr. F. K. Mostofi, Armed Forces Institute of Pathology, Washington 25, D. C., U. S. A., Secretary.

INTERNATIONAL CONGRESS AGAINST ALCOHOLISM, Istanbul, Turkey, Sept. 10-15, 1956. For information address: International contre l'Alcoolisme, Case Gare 49, Lausanne, Switzerland.

INTERNATIONAL CONGRESS OF ALLERGOLOGY, Rio de Janeiro, Brazil, S. A., Nov. 6-13. Dr. Bernard N. Halpern, 197 boulevard St. Germain, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES, Philadelphia, Pa., U. S. A., Sept. 2-9, 1956. Dr. William N. Fenton, National Research Council, Division of Anthropology and Psychology, 2101 Constitution Avenue, Washington 25, D. C., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Cologne, Germany, Aug. 19-23, 1956. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, U. S. A., Executive Director.

INTERNATIONAL CONGRESS OF ENTOMOLOGY, Montreal, Canada, Aug. 17-25, 1956. Mr. J. A. Downes, Science Service Bldg., Carling Ave., Ottawa, Ont., Canada, Secretary.

INTERNATIONAL CONGRESS OF GASTROENTEROLOGY, London, England, July 18-21, 1956. Mr. Hermon Taylor, London Hospital, White Chapel, London E.1, England, Honorable Secretary.

INTERNATIONAL CONGRESS FOR THE HISTORY OF SCIENCE, Florence and Milan, Italy, Sept. 3-10, 1956. Dr. M. L. Bonelli, Instituto di Ottica, Arcetri, Florence, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, Croix-Rouge Hellenique, 1 rue Mackenzie King, Athens, Greece, Secretary-General.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Madrid, Spain, Sept. 19-23, 1956. Dr. J. C. De Oya and Dr. J. Gimena, Hostaleza No. 90, Madrid, Spain, Secretaries.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Palmer House, Chicago, Illinois, U. S. A., Sept. 9-13, 1956. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF INTERNATIONAL SOCIETY OF BRONCHOESOPHAGOLOGY, Buenos Aires, Argentina, S. A., Oct. 28-29. Dr. Juan Carlos Araue, Cangallo 4015, Buenos Aires, Argentina, S. A., Secretary General.

INTERNATIONAL CONGRESS OF NEO-HIPPOCRATIC MEDICINE, Montecatini, Terme, Italy, May 20-22, 1956. Dr. Valente, 41 Avenue Verdi, Montecatini Terme, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Copenhagen, Denmark, July 22-27, 1956. Professor P. Plum, Rigshospitalet, Copenhagen, Denmark, President.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, Copenhagen, Denmark, August 20-24, 1956. Dr. B. Strandberg, Kobenhavns amts sygehus i Gentofte, Dept. of Rheumatology and Physical Medicine, Hellerup, Denmark, Honorable Secretary.

INTERNATIONAL CONGRESS OF PHYSIOPATHOLOGY OF ANIMAL REPRODUCTION AND ARTIFICIAL INSEMINATION, Cambridge, England, June 25-29, 1956. For information address: Dr. Joseph Edwards, Production Division, Milk Marketing Board, Thames Ditton, Surrey, England.

INTERNATIONAL CONGRESS OF RADIOLOGY, Mexico, D. F., Mexico, July 22-28, 1956. Dr. Jose Noriega, Tepic 126 (2e piso), Mexico, D. F. 7, Mexico, Secretary General.

INTERNATIONAL CONGRESS OF WORLD CONFEDERATION FOR PHYSICAL THERAPY, New York, New York, U. S. A., June 17-23, 1956. For information address: Miss Mildred Elson, American Physical Therapy Association, 1790 Broadway, New York 19, New York, U. S. A.

INTERNATIONAL GENERAL MEDICAL CONGRESS, University of Rosario Medical College, Rosario, Argentina, S. A., Nov. 7-12. Dean Jose Imhoff, Santa Fé 3100, Rosario, Argentina, S. A., Chairman.

INTERNATIONAL GENETICS SYMPOSIUM, Tokyo and Kyoto, Japan, Sept 6-12, 1956. For information address: Secretary, International Genetics Symposium, Science Council of Japan, Ueno Park, Tokyo, Japan.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Brussels, Belgium, July 29-Aug. 5, 1956. For information address: Prof. J. Reuse, Faculte de Medicine et de Pharmacie, 115 Boulevard de Waterloo, Brussels, Belgium.

INTERNATIONAL PROFESSIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Madrid, Spain, Sept. 28-29, 1956. Dr. Jacques Courtois, 1 rue Racine, St-Germain-en-Laye (S and O), France, Permanent International Secretary-General.

LATIN AMERICAN CONGRESS OF PATHOLOGY, Mexico, D. F., Mexico, Dec. 11-17. For information address: Laboratorio de Anatomia Patologica, Instituto N. de Cardiologia, Avenida Cuauhtemoc 300, Mexico 7, D. F., Mexico.

NORTH QUEENSLAND MEDICAL CONFERENCE, Cairns, North Queensland, Australia, June 25-30, 1956. Dr. W. R. Horsfall, P. O Box 672, Cairns, N.Q., Australia, Secretary.

PAN AMERICAN CONGRESS OF GASTROENTEROLOGY, Havana, Cuba, Jan. 20-27, 1956. For information address: Dr. Norberto M. Stapler, 1267 J. E. Uriburu, Buenos Aires, Argentine, S. A.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Santiago, Chile, S. A., Jan. 9-14, 1956. Dr. Rene Contardo, Huerfanos 930, Of. 74, Santiago, Chile, Secretary General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, San Juan, Puerto Rico, March 8-12, 1956. Dr. C. E. Munoz MacCormick, Apartado 9111, Santurce, Puerto Rico, Secretary General.

PAN AMERICAN MEDICAL WOMEN'S ALLIANCE, Santiago, Chile, March 6-13, 1956. For information address: Dr. Eva Cutright, 458 Beall Ave., Wooster, Ohio, U. S. A.

VENEZUELAN CONGRESS OF MEDICAL SCIENCES, Caracas, Venezuela, S. A., Nov. 18-26. Dr. A. L. Briceno Rossi, Apartado 4412, Ofic. del Este, Caracas, Venezuela, S. A., Secretary General.

WORLD CONGRESS ON FERTILITY AND STERILITY, Naples, Italy, May 18-26, 1956. For information address: Prof. G. Tesauro, S. Andrea della Dame, 19, Naples, Italy.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Various Centers. April 24-25 (Part II); June 19-20 (Parts I and II); September 4-5 (Part I). Candidates may file applications at any time but they must be received at least six weeks before the date of the examination for which application is made. New candidates should apply by formal registration; registered candidates may notify the board, indicating desired location, date and candidate number. Ex. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination*. Montgomery, June 19-21. Sec., Dr. D. G. Gill, State Office Bldg., Montgomery.

ARKANSAS:* *Examination*. Little Rock, Nov. 10-11. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Oral and Clinical Examinations for Foreign Medical School Graduates*. San Francisco, Nov. 13. *Oral Examination for Reciprocity Applications*. San Francisco, Nov. 12. Sec., Dr. Louis E. Jones, Room 536, 1020 N St., Sacramento.

COLORADO:* *Examination.* Denver, Dec. 6-7. Final date for filing application is Nov. 4. Exec. Sec., Mrs. Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular. Examination.* Hartford, Nov. 8-10. Sec., Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, Nov. 8-19. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. Joseph S. McDaniel, Dover.

FLORIDA:* *Examination.* Miami Beach, Nov. 20-21. Sec., Dr. Homer L. Pearson, 901 N. W. 17th St., Miami.

IDAHO: *Examination and Reciprocity.* Boise, Jan. 9-11. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

INDIANA: *Examination.* Indianapolis, June. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

IOWA:* *Examination.* Des Moines, Dec. 5-7. Ex. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines.

KANSAS: *Examination and Endorsement.* Topeka, Dec. 7-8. Sec., Dr. Lyle F. Schmaus, New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, Dec. 5-7. Asst. Sec., Mr. R. F. Dixon, 620 S. 3rd St., Louisville.

MAINE: *Examination and Reciprocity.* Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore. Dec. 13-16. Exec. Sec., Miss Hannah A. McCarthy, 1215 Cathedral St., Baltimore 1.

MISSISSIPPI *Reciprocity.* Jackson, December. Asst. Sec., Dr. R. N. Whitfield, State Board of Health, Jackson.

NEBRASKA:* *Examination.* Omaha, June 18-20. Director, Bureau of Examining Boards, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, Nov. 21-22. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York City and Syracuse, Oct. 4-7. Sec., Dr. Stiles D. Ezell. 23 S. Pearl St., Albany.

NORTH CAROLINA: *Reciprocity.* Asheville, Oct. 31. Sec., Dr. Jos. J. Combs, 716 Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 4-6. *Reciprocity.* Grand Forks, Jan. 7. Sec., Dr. C. J. Glaspel, Box 228, Grafton.

OHIO: *Examination.* Columbus, Dec. 15-17. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* *Examination.* Oklahoma City, June 5-6. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination.* Philadelphia, January. Acting Sec., Miss Marguerite G. Steiner. Box 911. Harrisburg.

SOUTH CAROLINA: *Examination.* Columbia, Nov. 7. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Jan. 17-18. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS:* *Examination and Reciprocity.* Galveston, Dec. 1-3. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

VIRGINIA: *Examination.* Richmond, Dec. 7-9. *Reciprocity.* Richmond, Dec. 6. Final date for filing application is Nov. 21. Address the Secretary, 631 First St. S.W., Roanoke.

WISCONSIN:* *Reciprocity and Examination.* Madison. Jan. 10-12; *Reciprocity,* Madison, Spring; *Reciprocity and Examination.* Milwaukee, July 10-12. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., Madison.

ALASKA:* On application. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM. The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Sec., Dr. John E. Kennedy, Agana.

HAWAII: *Examination.* Honolulu, Jan. 9-12. Sec., Dr. I. L. Tilden, 1020 Kapiolani, St., Honolulu.

VIRGIN ISLANDS: *Examination and Endorsement.* St. Thomas, Nov. 8-9. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 24-25. Deputy, Mr. Paul Foley, 1740 Massachusetts Ave., N.W., Washington 6.

FLORIDA: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, Box 340, Gainesville.

OREGON: *Examination.* Portland, Dec. 3; March 3; June 2, Sept. 8 and Dec. 1. Dr. Earl M. Pallett, Sec., State Board of Higher Education, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

WISCONSIN: Milwaukee, Dec. 3. Final date for filing application is Nov. 25. Madison, Apr. 7. Final date for filing application is Mar. 30. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

*Basic Science Certificate required.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Monday, Oct. 24

NBC-TV, 11:30 a. m. EDT. "Medical and Health News with Howard Whitman," a segment of the "Home" program.

NBC-TV, 9 p. m. EDT. "Medic" presents "When I Was Young," a drama based on the problems of menopause and medicine's new methods of dealing with it.

ABC-TV, 9:30 p. m. EDT. "Medical Horizons" reports on the residency training program at Johns Hopkins Hospital, Baltimore.

Monday, Oct. 31

NBC-TV, 9 p. m. EST. "Medic" turns to recent history for its presentation on aviation medicine. Titled "The World So High," the drama tells how William Lovelace, Army doctor, parachuted from a plane eight miles above the earth to test the effects of high altitude on the human system.

MAGAZINES

Life, Oct. 10, 1955

"Heart Attack"

A detailed report on the cause and effect of a heart attack illustrated with anatomic drawings and photographs. The presentation also includes a profile on Dr. Paul Dudley White and a summary of research into the disease.

Woman's Home Companion, November, 1955

"The Epoch Approach to Child Development," by Dr. Milton J. E. Senn with Evan McLeod Wylie

The director of Yale's Child Study Center questions the "rigidities" of pediatric theories that try to match children to "growing-up timetables." He feels instead "that each child will have a mind all his own which will respond individually to the way in which he is nurtured, reared and educated."

Pageant, November, 1955

"You're Giving Yourself That Headache," by Henry Lee

The author says that several researchers have been working out a system of preventive therapy for headaches based on the theory that long-time sufferers "have made it a habit to get headaches regularly." A "headache preventive therapist" first helps the patient "lower the weight of tension being carried" and, with medication, "stiffens the trigger so that it will take more tension to go off." The article mentions Gynergen Dihydroergotamine (D.H.E.-45) and a "pill combination of caffein and ergot," all produced by Sandoz Pharmaceuticals.

Better Living, November, 1955

"Chart of Common Childhood Illnesses," compiled by Dr. Harry S. Altman

As part of a continuing series published under the supervision of the New York Academy of Medicine, the author lists common childhood ailments and gives data on cause, treatment, and prevention.

Family Circle, November, 1955

"Pity the Poor Snorer," by Frances Gibson Satterfield

"Can anything be done to prevent snoring? Medical papers at various times have recommended a number of remedial steps, at the same time admitting they are often ineffectual." The author summarizes ideas on the subject.

GOVERNMENT SERVICES

PUBLIC HEALTH SERVICE

Supply of Poliomyelitis Vaccine.—HEW Secretary, Marion B. Folsom, announced Oct. 2 that enough poliomyelitis vaccine has been released to give two injections to three-fourths of the nation's children in the 5-9 age group. He said definite predictions are not possible, but present indications are that enough vaccine will be released to give two injections to all the 15,903,000 children in this top priority group by Dec. 31. It would take about 32 million cc. to give every child in the 5-9 age group two injections. The National Institutes of Health, Public Health Service, has released 23,812,596 cc. since the program started in April. This leaves less than 9 million cc. needed to complete two injections for each child in this age group. Of the vaccine released so far, about 13 million cc. have been released to the National Foundation for Infantile Paralysis for its program of free vaccinations for second and third grade school children. About 10 million cc. have been released to states and territories under the voluntary control program, 53% of this going to commercial channels and 47% to public agencies.

Secretary Folsom pointed out that while production and clearance of the vaccine is being expedited, research continues to seek possible improvements in the vaccine testing and manufacturing processes. This research program is being done under the joint auspices of the National Foundation for Infantile Paralysis, the vaccine manufacturers, and scientists in medical schools and universities, and the Public Health Service and its technical advisory committee. He said that after the immediate needs of the 5-9 age group have been met, vaccine will be made available to other age groups most susceptible to poliomyelitis. The age group priority recommendations are made by the National Advisory Committee on Poliomyelitis Vaccine, which counsels the Department of Health, Education, and Welfare on matters of distribution and allocation. This committee will be convened soon to consider the next priority group.

Plans for Distribution of Free Poliomyelitis Vaccine.—Surgeon General Scheele announced on Sept. 28 the approval of plans submitted by 22 states and territories for use of federal funds to distribute free poliomyelitis vaccine. An additional 16 plans have been received from states and territories and are being reviewed. The states and territories with approved plans are Arizona, Colorado, Delaware, Kansas, Kentucky, Louisiana, Minnesota, Missouri, Nebraska, New York, North Carolina, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin, Hawaii, and the Canal Zone. These states can start drawing immediately on $13,119,508 of the 30 million dollars that Congress appropriated for purchase and administration of vaccine.

Under the Poliomyelitis Assistance Act, all states are entitled to receive grants under a formula based on the cost of vaccine, the state's per capita income, and its population of children under 20, and pregnant women. Judging from the plans already approved, the poliomyelitis programs will be handled much the same as other state immunization programs, and plans will vary from community to community. Some counties and cities will hold public clinics; some will rely chiefly on private physicians; and many will make the vaccine available both in public clinics and to private physicians. In communities that lack local health departments, the program will be administered by the state health department or the local medical profession.

The federal law provides that states may determine methods of distributing the vaccine between public and commercial channels. In most states, some vaccine will be distributed through both channels and physicians will have some vaccine available from the public supply as well as from commercial outlets. Where the public vaccine is used in public programs, no means test can be used to limit the persons who are eligible for free vaccinations. The Public Health Service is responsible for allocating vaccine (as distinguished from funds) to states according to the percentage of children in an eligible age group who live in each state. State plans indicate an almost complete acceptance of the 5 to 9 age priority recommended by the National Advisory Committee on Poliomyelitis Vaccine.

Under the federal aid program, states have an option of buying their own vaccine or of obtaining federally purchased vaccine in lieu of cash. Early plans indicate that most of them plan to buy their own vaccine. They will receive their federal payments in monthly installments. States also have the option of using all of their share of the 30 million dollars for purchase of the vaccine or of reserving up to one-sixth for administrative costs, such as cost of conducting public clinics. Many of the states have indicated that they will spend all of their share for vaccine purchase.

Grants for Research in Hospital Services.—A program of grants for research in hospital services and facilities has been initiated by the Public Health Service. Grants from funds appropriated to the Department of Health, Education, and Welfare will be made to qualified nongovernmental research scientists, on the recommendation of the Federal Hospital Council. Grants will be awarded for research into: (1) the needs for hospital and related services; (2) measurement of resources to meet these needs; (3) hospital and medical facilities planning, both in relation to community needs and resources, and to architectural and design aspects; (4) methods of increasing the availability and effectiveness of hospital services and of improving the quality of these services; and (5) methods by which hospital services can be improved or costs lowered through coordination on a regional or other basis. Inquiries and applications for grants should be addressed to the Division of Research Grants, National Institutes of Health, Bethesda, Md.

Research on Air Pollution.—The Public Health Service has announced grants totaling $295,367 to start a special program of research into air pollution problems that Surgeon General Scheele hopes will answer many puzzling questions and help eliminate many dangers from air pollution. The 10 grants were awarded by the surgeon general on recommendations of the National Advisory Health Council from a $500,000 fund appropriated by Congress this year.

"There has been increasing evidence that various types of air pollution may constitute a serious, widespread danger to human health," Dr. Scheele said. "To what degree this is so, in just what way the human body may be damaged by different air pollutants in different concentrations, is therefore a matter of deep concern to us. These and other studies over the period of the next few years should provide some of the answers."

VETERANS ADMINISTRATION

Residents in Psychiatry Wanted.—The Veterans Administration Hospital, Hines, Ill., still has openings for resident physicians in psychiatry, beginning at any time but preferably at the start of each quarter for the current fiscal year. The hospital is a large training center that is accredited for training in 18 specialties of medicine. It is within easy commuting distance of various psychiatric facilities in Chicago. The deans' committee is comprised of the four local medical schools. The training program is well rounded and accredited for full training.

Dr. J. E. Davis Retires.—John Eisele Davis, Sc.D., retired from the Veterans Administration Sept. 30 after 35 years of government service and will now devote himself to teaching, lecturing, and writing. Dr. Davis has been a pioneer in development of recreation for the treatment of mental patients. He is the author of several books and manuals on medical rehabilitation and on corrective and recreational therapy as psychotherapeutic-activity approaches. He is said to have written the first book on recreational therapy published in this country in collaboration with Dr. William R. Dunton, associate professor of psychiatry at Johns Hopkins Medical School. He was the founder of the Association for Physical and Mental Rehabilitation which now has chapters in every state. His most recent book, "Clinical Applications of Recreational Therapy," was published in 1952. Dr. Davis' winter home is at Keystone Heights, Fla.

DEATHS

Lyon, James Alexander ✠ Washington, D. C.; born in Deposit, N. Y., Feb. 28, 1882; Maryland Medical College, Baltimore, 1906; subsequently studied in London, Vienna, and at Harvard; interned at Franklin Square and Bay View City hospitals (rotating service) Baltimore, 1906-1907; resident physician Loomis Sanatorium in Liberty, N. Y., 1907-1909; later senior resident physician and assistant superintendent at the Massachusetts State Sanatorium in Rutland; served as a first lieutenant, captain, and major in the Medical Corps of the U. S. Army from 1916 to 1925; first served on the Mexican Border and later with the American Expeditionary Forces in France, participating in the battles of Champagne-Marne, Aisne-Marne (Belleau, Château-Thierry), St. Mihiel, Ile de France, Lorraine, Defense of Toul, and Meuse-Argonne; later, served as post surgeon for the third U. S. Infantry, Fort Wayne, Detroit; his military honors included the Silver Star, Purple Heart, Congressional Selective Service medal, Mexican Border Service medal, the Victory medal with five major battle campaign clasps, and the French Croix de Guerre; first secretary and third president of the Washington Heart Association; member of the Association of Military Surgeons of the United States and the American Heart Association; fellow of the American Association for the Advancement of Science, American College of Chest Physicians, and the New York Academy of Medicine; life member of the American College of Physicians; professor of clinical cardiology at Georgetown University School of Medicine from 1929 to 1940; specialist certified by the American Board of Internal Medicine; consulting cardiologist at the Doctors Hospital, where he was a member of the executive and teaching staff; cardiologist at Sibley Memorial Hospital; for many years on the staffs of the Georgetown University Hospital, Children's Hospital, and the Emergency Hospital, where he died Aug. 3, aged 73, of adenocarcinoma of the sigmoid colon.

Kitchin, Thurman Delna ✠ Wake Forest, N. C.; born in Scotland Neck, N. C., Oct. 17, 1885; Jefferson Medical College of Philadelphia, 1908; in 1917 became professor of physiology at Wake Forest College, where he was president from 1930 to 1950, after which he became professor of physiology and hygiene at the Wake Forest School of Medicine, serving as dean for many years; past-president of the Medical Society of the State of North Carolina and the Sixth District Medical Society; fellow of the American College of Physicians and the American Association for the Advancement of Science; member of the Southern Medical Association, Tri-State Medical Society, Omicron Delta Kappa, Delta Kappa Epsilon, Phi Chi, and Phi Beta Kappa; in 1925 appointed by Governor McLean a member of a special committee to study the problem of the feebleminded in North Carolina; member of the Veterans Administration special committee on rehabilitation and education problems; member of the North Carolina advisory council of the unemployment compensation commission; chairman of the North Carolina advisory council for the employment security commission; representative of the Association of American Colleges Advisory Council on Medical Education; member of board of directors of the North Carolina Sanatorium for the Treatment of Tuberculosis in McCain; received honorary degrees of doctor of law from Duke University, Durham, University of North Carolina, Chapel Hill, and Davidson (N. C.) College; author of "Lectures on Pharmacology," "The Doctor and Citizenship," and "Doctors in Other Fields"; died Aug. 28, aged 69, of a heart attack.

Cheever, David ✠ Boston; born in Boston June 25, 1876; Harvard Medical School, 1901; associate professor of surgery emeritus at his alma mater, where he joined the faculty in 1913; served as a lieutenant colonel in the British Expeditionary Force during World War I; past-president of the American Surgical Association, New England and Boston Surgical societies, and the Boston Medical Library; from 1940 to 1946 a member of the board of overseers of Harvard University and was a vice-president of the Harvard Alumni Association; fellow of the American Academy of Arts and Sciences and the Massachusetts Historical Society; honorary fellow of the Royal Society of Medicine, London, and the Society of Surgery of Argentina; Bevan lecturer, Chicago Surgical Society (1939), and Balfour lecturer, University of Toronto (1941); member of the founders group of the American Board of Surgery; for many years on the staffs of the Boston City and Peter Bent Brigham hospitals; died at his summer home in Wellesley Aug. 13, aged 79, of heart disease.

Gillespie, Noel Alexander, Madison, Wis.; born in London, England, Dec. 25, 1904; M.B., University of Oxford School of Medicine, England, 1931, and M.D., in 1935; University of Wisconsin Medical School, Madison, 1945; after serving on the staffs of several British hospitals between 1934 and 1939, joined the faculty of the University of Wisconsin Medical School to occupy in turn the positions of resident, research associate, assistant professor, and associate professor of anesthesia; fellow of the Royal Society of Medicine, the Royal College of Surgeons, and the International College of Anesthetists; corresponding member of the Société française d'anesthésie; member of the American Society of Anesthesiologists, the Canadian Anesthetists' Society, and the Association of Anesthetists of Great Britain and Northern Ireland; author of "Endotracheal Anaesthesia"; died in the University Hospitals Aug. 21, aged 50, of myocardial infarction.

Porter, John McGill ✠ Concordia, Kan.; born in Kansas City Aug. 13, 1899; Harvard Medical School, Boston, 1926; interned at the Henry Ford Hospital in Detroit; from 1948 to 1953 member of the House of Delegates of the American Medical Association; president of the Kansas Medical Society, of which he was elected second vice-president in 1952, and in 1953 first vice-president; for eight years previously held the office of secretary of this society; past-president of the Cloud County Medical Society and the Kansas Heart Association; during World War II served in the U. S. Naval Reserve for four years and was discharged with the rank of captain; during World War I was a second lieutenant in the field artillery; in 1947 resigned as health officer of Cloud County to accept an appointment as a member of the state board of health; died Sept. 5, aged 56, of acute pancreatitis.

Pillsburg, Henry Church ✠ Brigadier general, U. S. Army, retired, Ross, Calif.; born in Lowell, Mass., May 27, 1881; Harvard Medical School, Boston, 1906; fellow of the American College of Physicians and the American College of Surgeons; member of the Asssociation of Military Surgeons of the United States; entered the regular Army in 1907; served during World Wars I and II; became a lieutenant colonel in 1927 and a colonel in 1933; major assignments included direction of medical services in the Panama Canal Zone, service as director of x-ray facilities at Walter Reed Hospital, Washington, D. C., and command of the Lovell General Hospital in Fort Devens, Mass., and the Thayer General Hospital in Nashville, Tenn.; retired May 31, 1945; died July 18, aged 74, of a heart attack.

Shaw, Arthur Briggs, Altadena, Calif.; born in Joliet, Ill., April 28, 1886; Dartmouth Medical School, Hanover, N. H., 1911; interned at Boston City Hospital, and the Willard Parker Hospital and New York Lying-In Hospital in New York City; formerly practiced in Longview, Wash., where he was president of the Cowlitz County Medical Association for two terms and was one of the founders of the Cowlitz General Hospital, serving on its board for several years; died in the Collis P. and Howard Huntington Memorial Hospital in Pasadena July 18, aged 69, of myocardial infarction.

✠ Indicates Member of the American Medical Association.

Aurand, William Henry ✦ Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; member of the American Academy of General Practice; in 1938 became chief of staff of St. Barnabas Hospital; died in the Franklin Hospital July 17, aged 80, of carcinoma of the bladder with multiple bone metastases.

Bagwell, Robert Wayne ✦ Borger, Texas; University of Texas School of Medicine, Galveston, 1941; interned at the Baltimore City Hospital; formerly a resident at the Brackenridge Hospital in Austin; served in the U. S. Naval Reserve during World War II; died May 23, aged 38, of coronary thrombosis.

Bennett, Francis Paul ✦ Alliance, Ohio; University of Cincinnati College of Medicine, 1922; interned at the Wheeling (W. Va.) Hospital; for many years a member and at one time president of the staff of the City Hospital; died in the University Hospitals, Cleveland, June 26, aged 61, of abdominal cancer.

Bibb, James Porter, Montgomery, Ala.; University of Nashville Medical Department, 1907; died July 20, aged 75, of arteriosclerosis.

Blanchard, Florence Estelle Crummett, Windsor, Vt.; College of Physicians and Surgeons, Boston, 1911; died June 29, aged 71, of cerebral thrombosis.

Bowman, Delbert J. ✦ Lincoln, Neb.; Cotner University Medical Department, Lincoln, 1911; for many years on the staff of St. Elizabeth Hospital; died Aug. 4, aged 73.

Briscoe, Benjamin E., Willcox, Ariz.; University of Tennessee Medical Department, Nashville, Tenn., 1901; served on the school board and state legislature; died in Phoenix July 29, aged 78, of cancer of the mouth.

Browning, Eugene Shelley ✦ Grand Rapids, Mich.; Detroit College of Medicine, 1905; at one time on the faculty of Grand Rapids Medical College; on the staffs of the Blodgett and St. Mary's hospitals; died in Butterworth Hospital July 7, aged 74, of cerebral hemorrhage and hypertension.

Carson, James Green ✦ Clarksdale, Miss.; Columbia University College of Physicians and Surgeons, New York City, 1893; died Aug. 18, aged 86.

Cleary, Joseph P. ✦ Minotola, N. J.; Bennett Medical College, Chicago, 1913; veteran of the Spanish-American War and World War I; on staff of Lankenau Hospital in Philadelphia; died in Atlantic City, N. J., Aug. 7, aged 73, of a heart attack.

Cooper, Irving Joseph ✦ New Brunswick, N. J.; Georgetown University School of Medicine, Washington, D. C., 1928; on the staff of St. Peter's Hospital, where he served an internship and where he died Aug. 4, aged 52, of cerebral thrombosis, coronary thrombosis, and diabetes mellitus.

Dillard, James Albert, Waurika, Okla.; University of Arkansas School of Medicine, Little Rock, 1910; county health director; died in the Waurika Hospital July 30, aged 70, of a heart attack.

Edahl, Edwin Waldamar ✦ Van Horn, Texas; University of Illinois College of Medicine, Chicago, 1930; interned at the Wesley Memorial Hospital in Chicago; served during World War II; at one time on the staff of the Veterans Administration Hospital in Amarillo; formerly associated with the New Mexico Health Department; died in El Paso June 8, aged 62, of acute myocardial infarction.

Gillespie, Julian Mason, surgeon, U. S. Public Health Service, retired, Richmond, Va.; University of Maryland School of Medicine, Baltimore, 1909; retired Nov. 25, 1930; died in Baltimore July 27, aged 73, of subdural hemorrhage.

Greer, Neil E. ✦ Lockney, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1914; died June 26, aged 72.

Hess, Peter William, Dexter, Maine; Harvard Medical School, Boston, 1901; died in the Plummer Memorial Hospital Aug. 6, aged 80, of myocardial failure.

Holmes, Alfred Wellwood, Detroit; Detroit College of Medicine, 1910; member of the Michigan State Medical Society; died in the Lincoln Hospital June 22, aged 68, of coronary thrombosis.

Holmes, John Franklin ✦ Manchester, N. H.; Tufts College Medical School, Boston, 1909; formerly chairman of the board of health; fellow of the American College of Surgeons; served on the staffs of the Elliot Hospital in Manchester, the Hillsboro County General Hospital in Grasmere, the Alexander-Eastman Hospital in East Derry, Pembroke Sanatorium in Concord, Exeter (N. H.) Hospital, and Waldo County General Hospital in Belfast, Maine; died June 19, aged 76, of pulmonary embolism and pneumonia.

Honigsberg, Leo ✦ Miami Beach, Fla.; University and Bellevue Hospital Medical College, New York City, 1928; boxing commission physician from 1942 to 1953; police surgeon for the North Miami police department since 1949; on the staff of St. Francis Hospital, where he died July 6, aged 52, of coronary occlusion with myocardial infarction.

Howell, Robert, Traverse City, Mich.; Detroit College of Medicine, 1892; for many years assistant superintendent of the Eloise (Mich.) Hospital; died in the James Decker Munson Hospital July 29, aged 90.

Kahn, Isidor Nathan, New York City; University and Bellevue Hospital Medical College, New York City, 1907; member of the Medical Society of the State of New York; formerly associated with Gouverneur, Bronx, and Bellevue hospitals; died Aug. 11, aged 75, of carcinoma of the stomach.

Kornbluh, Ignatius ✦ New York City; University and Bellevue Hospital Medical College, New York City, 1906; an associate member of the American Medical Association; served on the staffs of the Misericordia and Lenox Hill hospitals; died June 22, aged 75, of coronary thrombosis.

Lazarus, Benjamin ✦ Newton, Mass.; Harvard Medical School, Boston, 1899; died Aug. 15, aged 78, of coronary thrombosis.

Leighton, Isaac Wellman, Iowa City; Northwestern University Medical School, Chicago, 1909; associate professor of anatomy at the State University of Iowa College of Medicine; died in the Mercy Hospital Aug. 4, aged 70, of coronary thrombosis.

Lemberg, Leon, New York City; New York University Medical College, New York City, 1898; died July 27, aged 86, of heart disease.

Lutterloh, Isaac Sr., Sanford, N. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1890; died June 6, aged 89, of chronic myocarditis.

McCarthy, James Matthew ✦ Woonsocket, R. I.; Harvard Medical School, Boston, 1917; interned at St. Joseph's Hospital in Providence; served during World War I; past-president of the Woonsocket District Medical Society; on the staff of the Woonsocket Hospital; died in the Phillips House of Massachusetts General Hospital, Boston, July 26, aged 64.

McCarthy, Ralph Rowland, Downey, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1911; died June 9, aged 71, of pulmonary edema and emphysema.

McCorkle, William Pyles ✦ Bridgeville, Pa.; Jefferson Medical College of Philadelphia, 1897; an associate member of the American Medical Association; died in the Allegheny General Hospital, Pittsburgh, June 11, aged 85, of coronary occlusion.

Michie, Winston Thomas, Memphis, Tenn.; University of Virginia Department of Medicine, Charlottesville, 1898; died in the Baptist Hospital July 28, aged 82, of pulmonary abscess and cystic nephritis.

Miley, Weir Mitchell ✦ Anderson, Ind.; Jefferson Medical College of Philadelphia, 1910; past-president of the Madison County Medical Society; served overseas during World War I; in August, 1927, became a member of the school board, of which he had been treasurer, secretary, and president; died July 26, aged 69, of asthma and heart block.

Mitchell, Frank Baxter, Crescent, Ga.; Medical School of Maine, Portland, 1901; New York Homeopathic Medical College and Hospital, New York City, 1905; at one time associated with the Milledgeville (Ga.) State Hospital; died in Savannah, July 3, aged 78.

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Moon, Arthur Ernest ✦ Temple, Texas; University of Texas School of Medicine, Galveston, 1920; fellow of the American College of Physicians; for many years associated with Scott and White Memorial Hospital; died July 27, aged 65, of a heart attack.

Morris, William Francis ✦ Princeton, Ind.; Jefferson Medical College of Philadelphia, 1900; county coroner for two terms; formerly health officer of Fort Branch; died April 22, aged 79, of coronary thrombosis, hypertension, and arteriosclerosis.

Mudge, Murray Fairbanks, Newfane, N. Y.; Niagara University Medical Department, Buffalo, 1895; veteran of the Spanish-American War and World War I; died July 23, aged 85.

O'Connor, Roderic Patrick ✦ Oakland, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society; for many years an officer in the regular Army; on the staff of the Providence Hospital; a consultant for Children's Hospital of the East Bay; died in Carmel July 6, aged 77, of myocardial infarction.

Pieper, Henry G. ✦ St. Louis; St. Louis University School of Medicine, 1903; also a registered pharmacist; died July 25, aged 76, of injuries received in an automobile accident.

Purtle, Christopher Columbus, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1907; served as superintendent of the Pulaski County Hospital; died in St. Vincent's Infirmary June 26, aged 76, of coronary occlusion and peptic ulcer with hemorrhage.

Reed, James Ross, Altadena, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the International College of Surgeons and the American College of Surgeons; served during World War I; on the staffs of the St. Luke Hospital and the Collis P. and Howard Huntington Memorial Hospital; died May 11, aged 75, of cerebral embolus.

Robertson, Arthur Edward, Dana, Ind.; The Hahnemann Medical College and Hospital, Chicago, 1910; died in Pontiac, Mich., July 7, aged 80.

Rosander, Phyllis, Minneapolis; University of Minnesota Medical School, Minneapolis, 1950; interned at Minneapolis General Hospital; formerly a fellow in obstetrics and gynecology at the University of Minnesota; served a residency at Sanford Hospital in San Francisco; killed in an automobile accident near Knolls, Utah, May 29, aged 34.

Rubenstein, Louis G. ✦ Pittsburgh; University of Pittsburgh School of Medicine, 1899; an associate member of the American Medical Association; a founder and for many years on the staff of the Braddock General Hospital; died Aug. 21, aged 84.

Schultz, J. William ✦ Tremont, Pa.; Medico-Chirurgical College of Philadelphia, 1895; an associate member of the American Medical Association; for many years deputy coroner; on the staff of the Pottsville (Pa.) Hospital; died July 27, aged 82, of acute myocardial infarction.

Small, Frederick Rieth ✦ Newburgh, N. Y.; University and Bellevue Hospital Medical College, New York City, 1931; interned at the Knickerbocker Hospital in New York City; fellow of the American College of Surgeons; member of the New York Academy of Medicine; served during World War II; chief of surgery of St. Luke's Hospital; consulting surgeon, Highland Hospital in Beacon; died in Skytop, Pa., July 20, aged 57, of coronary occlusion.

Stark, Charles Vernon, Harlan, Ky.; Tennessee Medical College, Knoxville, 1900; died June 1, aged 76.

Stevenson, Eber Fortner ✦ Waterloo, Iowa; Jefferson Medical College of Philadelphia, 1904; died July 11, aged 81, of coronary heart disease.

Stork, A. Robert ✦ Logan, W. Va.; Medical College of Virginia, Richmond, 1935; died Sept. 11, aged 44, of pneumonia.

Stoutamire, Fred A., Richmond, Va.; University College of Medicine, Richmond, 1911; anesthetist at the Retreat for the Sick; died July 23, aged 67, of acute coronary thrombosis.

Streeter, Frederick B., Glens Falls, N. Y.; Albany (N. Y.) Medical College, 1879; served as health officer of the village of Glens Falls and the town of Queensbury and as coroner of Warren County; formerly member of the board of education; on the honorary staff of the Glens Falls Hospital; died Aug. 25, aged 101, of arteriosclerosis.

Swift, Robert Howard ✦ Orinda, Calif.; Washington University School of Medicine, St. Louis, 1943; interned at St. Mark's Hospital in Salt Lake City; formerly a resident at the Ellis Fischel State Cancer Hospital in Columbia, Mo., and the Permanente Foundation Hospital in Oakland; died July 28, aged 38.

Switzer, John Franklin, New Straitsville, Ohio; Eclectic Medical Institute, Cincinnati, 1893; died in Mount St. Mary's Hospital in Nelsonville July 10, aged 89, of cancer.

Thompson, William Albert, Stigler, Okla.; College of Physicians and Surgeons, Little Rock, 1909; formerly associated with the Indian Service; died Aug. 11, aged 81.

Thompson, William Graham ✦ Andover, Mass.; Harvard Medical School, Boston, 1933; on the staffs of Bon Secours Hospital in Methuen, and Lawrence (Mass.) General Hospital; died Aug. 13, aged 49, of idiopathic pulmonary edema.

Trooien, Peter O., Eagle Grove, Iowa; Minneapolis College of Physicians and Surgeons, 1906; died Aug. 2, aged 81, of Hodgkin's disease.

Troutman, Holmes Fielding ✦ Huntington, W. Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; formerly chief surgeon at the Queens Hospital in Honolulu; died in the Memorial Hospital Aug. 16, aged 74, after a cerebral hemorrhage.

Voislawsky, Van Rensselaer, New York City; Columbia University College of Physicians and Surgeons, New York City, 1929; interned at the St. Luke's Hospital, where he was later on the staff; formerly a resident physician at the Bellevue Hospital; certified by the National Board of Medical Examiners; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; died Aug. 29, aged 51, of pneumonia.

Walker, Arthur Wellington ✦ Riverside, Calif.; John A. Creighton Medical College, Omaha, 1904; an associate member of the American Medical Association; fellow of the American College of Surgeons; died in Santa Ana July 5, aged 81, of coronary thrombosis.

Wall, John Alexander, San Antonio, Texas; University of the South Medical Department (Sewanee Medical College), Sewanee, Tenn., 1899; died in Houston May 11, aged 81, of cerebral vascular accident.

Wenzinger, Harold John ✦ Defiance, Ohio; University of Louisville (Ky.) School of Medicine, 1937; secretary of the Defiance County Medical Society; member of the American Academy of General Practice; served during World War II; physician for Defiance College; on the staff of the Defiance Municipal Hospital; died in an automobile accident near Greensburg, Ind., Aug. 25, aged 45.

Whitaker, William Jerry, Dallas, Texas; University Medical College of Kansas City, Mo., 1900; served during World War I; at one time practiced in Pryor, Okla., where he founded a hospital bearing his name, and was physician to the Whitaker Orphans' Home; died in the Methodist Hospital Aug. 2, aged 74, of coronary occlusion with myocardial infarction.

Wilkinson, Stella Lucy ✦ St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1903; served on the staffs of the Moose Lake (Minn.) State Hospital and the Minnesota School and Colony in Faribault, Minn.; died in Midway Hospital July 22, aged 81, of coronary sclerosis and cholelithiasis.

FOREIGN LETTERS

AUSTRIA

Physicians' Strike.—On June 18, 1955, nearly 50% of the active physicians from all parts of Austria went to Vienna to participate in a protest against the proposed general social security bill (ASVG). On Aug. 25 and 26, all the Austrian physicians (practitioners, specialists, hospital physicians, professors, and assistants) went on strike. A well-organized emergency service was established so that no patient remained without emergency care. The ASVG deeply affects the free professional activities of the physicians and greatly limits the rights of the insured persons. The law would mean the end of any noteworthy private practice and would also mean the creation of a monopoly in the field of health by the main body of carriers of social insurance.

Development of Health Insurance in Austria.—Out of the Christian "Caritas" of the Middle Ages, community organizations have evolved to help the medically indigent. Guild funds were created to provide for a balance of risks. The Miners' Funds is an outgrowth of one of these. From such sources large-scale health insurance developed in the 1880's. In 1888 a health insurance law made this insurance obligatory for workmen in industry, traffic, and trade. In the beginning, these insurance funds were simple and economic; the number of employees was small and the contacts between insured persons, physicians, and employees were personal and close. The claims of the insured persons were reasonable, and the physicians worked for a small fixed salary and were able to compensate their low fees with their income from private practice. The industrial revolution brought about a rapid extension of health insurance. Although the loss of World War I, the dismemberment of the Austrian Empire, and the resulting breakdown of the currency caused a severe shock to the insurance funds, they were kept alive. The employee insurance law of 1926, for the first time, combined health insurance with the other branches of social insurance for employees in private business; a similar law for the laborers was enacted, but, because of the bad economic conditions at this time, no attempt was made to enforce it. In the meantime 31 amendments were added to the original law. A law for the agricultural workers gave sickness, accident, invalidism, and old age insurance to this group, and all federal employees were similarly insured. A new system of contract physicians was initiated by some of the funds. This system gave the insured persons the right of free choice of their physician. The number of insured persons snowballed; free practice shrank from day to day; and the physicians became more and more dependent on the insurance funds.

Value of Social Security.—In the 40 years of its existence (1895 to 1935) social security had proved its value and its superiority over private charity and private services for the poor. The feeling of security even when the insured person claimed no benefits, the certainty of being protected from the first day of an illness, and the feeling of ease about the welfare of one's family impressed the employee that he was getting something in return for his high premiums. The employers too appreciated the partial release from liability worries, the assurance of the worker's return after his recovery, and the increased work capacity of the worker due to better medical care. From the viewpoint of political economy, it was important that thousands of people in times of disease did not fall out as customers; the sales remained constant and millions of schillings were flowing back into the economic life of the country through insurance fund payments. For the physician there was the advantage that his insurance salary, even though reduced, was assured. Furthermore the emphasis on disease and accident prevention was beneficial. The government considered the social security of large masses of the population as the most effective dike against restlessness, revolution, and chaos.

In a situation in which unemployment deprived the insurance funds of their support, the threat of civil war paralyzed industry and the economic position of the physicians reached a low point. An industrial social insurance law was therefore enacted in 1935. It contained all those characteristics that in the course of World War II came to be called "social security" in the allied countries. Social security in the form of unemployment benefits weakens the private insurance principle. Health insurance is truly insurance, but unemployment insurance is a public social service. In the period between the two world wars, inflation had destroyed the security reserves as well as the economically valuable connections of the empire. The private insurance companies coldly insisted on the principle of "a crown is a crown," since their capital had been proportionately devaluated. The social security agency, however, had to revaluate all the pensions and had at least to adjust the sickness benefits. Under the economic circumstances that prevailed at this time, increased premiums (obligatory contributions) or federal subsidies were out of the question and unemployment was a great burden to the budget. There was, therefore, only one way, i. e., to reduce the benefits. No extension of insurance to new groups was possible. The law of 1935 now appears as an outstanding achievement professionally and socially, which restored the balance between revenues and expenses in social security, relieved the most acute suffering, and separated true social insurance from the tasks belonging to the social service. In many details the administration was simplified; premiums were based on a certain percentage of wages. Most important, the law placed the physicians and their organizations as partners, with rights equal to those of the insurance funds in the National Committee, the Committee for Physician's Help, and other special committees. In these committees, the number of representatives from the national association of the social insurance carriers and from the members of the legal representative body for the interests of the physicians was the same. These committees settled all the important basic problems by arbitration.

Changes After Occupation of Austria.—The occupation of Austria by Nazi Germany in 1938 gave the German National Social Insurance Law legal force in Austria. The autonomy of the social security agency was abolished, and the Association of Fund Physicians became the highest authority. In spite of the difficulties that were brought about by World War II, the health insurance program continued to function and the physicians were satisfied, although they objected to some of the authoritarian interventions by the government. After 1945 an Austrian type of health insurance was reestablished and the autonomy of the insurance funds was restored, but at this time the physicians had no legal representatives. They expected that the tradition of the previously existing industrial social security law, which had proved its value, would be continued, but that was not the case. The new social security law gave the health insurance funds a clear preponderance over their former partners. The funds were designated as carriers and the physicians as performing aids. The physicians made contracts with the insurance funds, but they also had to carry all the burdens of a free profession. They had to equip their offices and pay rent on them, but they did not participate in the 48 hour week, overtime pay, paid vacation, or old age pension plans. They were, however, bound by regulations of the insurance funds the same way the workers were. Their fees, which had remained far below the costs of living, were fixed by the insurance funds. Only the amount that remained after all the cost of sickness benefits, hospital expenses, administration, and drugs had been met was allocated for the physicians' fees. In 1949, when the physician's

The items in these letters are contributed by regular correspondents in the various foreign countries.

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law gave the physicians legal representation, the economic position of the profession improved but some of the regulations of the social security law became a permanent drag and had to be fought constantly. In 1955 a revision, the ASVG, was drafted. It was this law that became the center of the conflict.

Provisions of the New Social Security Bill.—All employees, white-collar workers and laborers alike, are required to participate in the insurance. The compulsory funds are divided into the regional health insurance funds, an agricultural health insurance fund, a health insurance fund of the federal employees, a health insurance fund of the federal railroads, a small number of health insurance funds for certain larger industries or for the employees of the city of Vienna, health insurance funds for self-employed persons, the so-called master health insurance funds of general trades, and some small health insurance funds such as those of lawyers and public notaries. The statutes of these compulsory funds give in addition a free margin for a voluntary insurance, particularly in the form of a voluntary continuation after employment has been discontinued, but they also comprise automatically all the members of the family of the insured persons.

Voluntary health insurance funds exist in Austria but are of little importance compared with the comprehensive compulsory funds. These voluntary funds are appreciated by the insured persons and by the physicians. Their most important functions are to provide benefits in addition to medical treatment (including specialists), complete hospitalization for 26 to 52 weeks, transportation to the hospital, drugs prescribed by a physician, obstetric service, pregnancy benefits, and nursing and dental care (the patient pays part of the cost of prostheses) provided by the compulsory health insurance funds. Since compulsory insurance embraces nearly the entire population, there is little room for any private practice. The management of the compulsory insurance funds is in the hands of two committees, but the physicians have neither a seat nor a vote in these administrative bodies. This exclusion of the physician from the management of the insurance funds was associated with an appalling reduction of fees. A small number of physicians in administrative or industrial positions are paid a fixed salary, but the overwhelming majority work as contract physicians and are paid according to individual contracts, which are drawn up according to regulations of fees that differ regionally and according to the various health insurance funds. From the original concept of granting treatment at reduced rates to those who are needy, now the reduced rates apply to everyone. The system's disadvantage is that the physician is exploited, the insured person fears he will not be well taken care of, and administrators of insurance funds assume that the physicians are collecting insurance certificates (as a basis for their fees) and are admitting too many patients to hospitals, although neither of these assumptions has been confirmed.

Amount of Fees.—The amount of the fee varies greatly. In 1955, the master sickness insurance funds and the insurance associations of the federal employees and federal railroads paid about 25 cents for a consultation and twice that for home calls. The funds with lump sum contracts pay fixed amounts per year or a percentage of the fund's revenues. Funds granting a lump sum for the individual case pay only $0.77 to $1.15 per case for services including consultations, home calls, and injections for each three months. On behalf of the Main Combine, the director stated in a radio broadcast that each contract physician earns $230 on the average per month. He based this statement on the yearly amount of physicians' fees, totaling $16,795,480, but this figure includes all the fixed salaries of administrative and industrial physicians, which amount to about 20% of the total figure. The Chamber of Physicians estimated that the average monthly income of the contract physicians was $173. This includes payments for such items as major operations, refunds for travel expenses, supplies, office rent, and x-ray examinations. In other words it represents receipts, not income. According to the yearly report of the Lower Austrian Regional Health Insurance Funds, 17 physicians had a gross income of less than $38.50 a month; 216 received $63.50; 171 received less than $115; and only 164 received more than $192. Furthermore, no health insurance funds pay a penny to the physician if he becomes disabled by an infectious disease acquired in the line of duty.

About 2,250,000 insurance certificates were submitted by the 680 contract physicians of Lower Austria in 1952, or about 275 per month per physician. Each of these certificates renresented about six office calls, counting one home call as two office calls. Thus 1,650 office calls fall to one physician's share in one month. If the contract physician received (as the director asserted) $230 a month, he would be paid about 14 cents gross income for one office call, including all expenses, night service, overtime and Sunday work, and return on his expensive education, but in reality he receives only about 10.5 cents. In spite of all this, the patients are receiving good care. The physicians' services are highly appreciated by everybody. This should make it clear that the situation of the Austrian physicians, as it was bound by the Social Security Transition Law, was highly unsatisfactory. The physicians believed in social security as such, but they believed that a new code was necessary and looked forward to its enactment.

Objections to Proposed Social Security Law.—Since 1953, when the outline of the social security law that was worked out by the Main Combine and by the Ministry of Social Service became known, the Chamber of Physicians objected to some of the regulations and presented an alternate plan rewording the part of the law that dealt with the regulations concerning the relationship of the physicians with the insurance carriers. After long, difficult negotiations with the Main Combine, the political parties, and finally the Social Committee of the National Council (parliament), in the summer of 1955 an agreement seemed likely. The main points against which the physicians fought were further extension of the compulsory insurance, without collecting higher fees from the insured persons in the upper income brackets or without granting higher fees to the physicians, and further unlimited construction of ambulatoriums, without granting the physicians the right to determine the needs for such ambulatoriums and without maintaining the competition between contract physician and ambulatorium under equal conditions. The main points for which they fought were the right of work for every physician in the frame of the social security, since nearly the entire population already is included; protection against arbitrary notice given to the contract physician without stating reasons; an objective, independent group of appeal judges with the right to make decisions; and the establishment of more equitable fees.

The proposal of the Chamber of Physicians was based on the following principles of the World Medical Association: free selection of physician by the patient, no intervention by a third party between physician and patient, control of medical service only by the physician, free selection of hospital, freedom of movement for the physician, freedom of administration of drugs and treatment, representation of the medical profession in public agencies for medical care, free professional activities of physicians, payment independent of the financial situation of the insurance funds, admission of all physicians to social security benefits, no compulsory insurance of persons who are able to pay for their medical care, and no exploitation of physicians.

With infinite patience an attempt was made to have these basic claims presented in the social security law, but, because a satisfactory result could not be obtained by the negotiations with the Main Combine, the large-scale protest of June 18 was staged. Its success was overwhelming. There was general agreement among the Austrian physicians, independent of party membership, medical specialty, or age. A resolution was presented to the Federal Chancellor, and as a result conferences were held and differences seemed to be resolved. In August, the cabinet formally introduced the social security bill in the National Council. It did not contain any of the improvements that had been agreed on with the physicians. A warning strike was staged throughout Austria on Aug. 25 and 26. This was carried out without any disadvantage to the patients. The population sided with the physicians as did the press, because this was not a common strike about wages only but in the final analysis about the question of monopoly and collectivism on one side and the individual and his freedom on the other.

CUBA

Brain Tumor in Children.—The anatomic and topographic characteristics of 80 children under the age of 15 years affected with brain tumor have been analyzed by Dr. Jorge A. Picaza and his co-workers (*Revista cubana de pediatría*, vol. 27, no. 6, 1955). The patients were divided into three groups: group one consisted of 29 patients who had a malignant tumor proved histologically and whose prognosis was hopeless; group two consisted of 29 patients who had a histologically benign lesion but one which by virtue of its location (basal-nuclei, pons, optic chiasm, or third or fourth ventricle) could not be removed surgically without great risk; and group three consisted of 22 patients with a histologically benign lesion located in a more accessible site. In a follow-up of one to four years only four patients in group one were still alive. Of those in group two, 3 were alive and well; 4 reported an improvement of symptoms after radiotherapy (this is usually ineffective); 4 could not be traced; and 18 were dead. Mortality in patients of the type classified as group three is conditioned by such factors as the size and depth of the lesion, the patient's general condition, and the surgeon's skill. Fifteen patients in group three were cured by removal of their tumor; two were improved for a short time only; and the remaining five were dead. Only about 25% of the children with a primary neoplasm of the brain can be cured by the forms of treatment now available. Surgical removal is the only treatment capable of resulting in a permanent cure. Radiotherapy gives temporary relief in some patients. In evaluating the therapeutic results in children with brain tumors, the public, and even the average physician, tends to overemphasize the operative mortality and to overlook the fact that the long-term results are better than those usually observed in the treatment of other neoplasms in children.

Artificial Hibernation for Cerebral Vascular Accidents.—Dr. Centurión and his co-workers (*Archivos del hospital universitario*, vol. 6, no. 6) have treated five patients with cerebral vascular accidents with artificial hibernation. This treatment lessens the metabolic requirements of the body, prevents hyperthermia, permits normal respiratory rhythm and control of bronchial secretions, stabilizes arterial pressure, and allows adequate cerebral circulation. Four of the patients so treated (three with cerebral hemorrhage and one with cerebral thrombosis) were cured, and one with hemorrhage died.

ENGLAND

Food Poisoning.—About two-thirds of the outbreaks of food poisoning in Great Britain are due to eating such meat preparations as sausages, meat pies, and ground meat. Salmonella organisms are responsible for many outbreaks, but there is always some doubt as to whether the organisms are already in the food or are transmitted to it by food handlers. A recent outbreak of food poisoning in Lancashire (Reports on Public Health and Medical Subjects, no. 96, London, Her Majesty's Stationery Office, 1955) involved 1,149 persons of all ages, 5 of whom died. The infected food proved to be meat pies from a bakery, the causative organism being Salmonella morbificans, which is relatively uncommon in Britain. This organism was found in the feces of most of the sufferers and in a large proportion of the pies. Most patients were bacteriologically clear by the 4th week, but five were still carrying the organism after the 15th week, even though they had all been treated with antibiotics and sulfonamides. Examination of the bakery staff, the common constituents of the pies, such as gelatin, flour, and fat, and the cooking utensils yielded no trace of the infecting organism. It was, therefore, assumed to come from the meat, some of which had been kept for eight days before delivery to the bakery. A herd from which some of the meat was derived was found to be infected with S. morbificans. Whatever the source of the organisms, these would have been killed if the pies had been properly processed. Tests showed that a temperature of 380 F for 40 minutes is lethal to Salmonella in a 4 oz. pie. This temperature was not reached in the oven in which the pies were cooked. The baker's choice must have been between damage to his pies or to his customers. Experiments were made to see if pies could be contaminated after baking. Organisms could be recovered from the pies if the operator's fingers were contaminated. A bowl of gelatin used in making the pies was found to be a yard away from a dirty wash basin, and an operator preparing the gelatin was found to be a symptomless carrier of Salmonella typhimurium. Meat pies are a popular and cheap article of food in Great Britain, and, as the incidence of Salmonella poisoning is rising every year, great care should be taken in food processing to use temperatures that sterilize cooked foods and to insist on scrupulous cleanliness on the part of the food handlers before and after cooking.

Safer Anesthetic Apparatus.—A new safety device to prevent mistakes in administering the wrong anesthetic gas has been announced by the British Standards Institution. At present each gas cylinder is clearly labeled by name and is distinctively colored to identify it. Large cylinders, such as are used for pipeline installations, have valves of a type that make it impossible to connect them incorrectly. The British Standards Institution has announced the adoption of a noninterchangeable valve for gas cylinders, with a capacity of 24 cu. ft. or less. Several medical men, including representatives of the Association of Anesthetists of Great Britain and the Medical Defence Union, have been serving on the British Standards committee dealing with the problem. The principle of the noninterchangeable valve is similar to that of radio valves, whereby spacing of the pins insures that each type can be inserted only in the corresponding socket. Differently spaced pairs of holes in the valves correspond with pins in the connecting part of the administration apparatus, so that only the right cylinder can be connected to the right yoke. It will thus be quite impossible to connect a cylinder of carbon dioxide or nitrous oxide to an apparatus administering oxygen. Deaths from this kind of error have occurred in the past. An identical valve system is already in use in the United States, Canada, Australia, and Switzerland, and it is hoped that all NATO countries will adopt it so that the medical services of their armed forces can be coordinated. The system has also been recommended in Stockholm by the technical committee of the International Organization for Standardization. The new equipment will be available in Great Britain in the fall, but the conversion of existing apparatus will not start until the fall of 1956 as new tools are needed. The first machines to be converted will be those in hospitals. Manufacturers will bear the cost of converting gas cylinders, but the cost of converting apparatus will be the responsibility of the owner.

International Congress on Diabetes.—The second Congress of the International Diabetes Federation met in Cambridge in July. The Banting Lecture of the British Diabetic Association was given by Dr. Joslin of Boston, who all his life has advocated strict control of diabetes to prevent or delay complications. His views are supported by data on the longevity of diabetic patients and their causes of death. Prof. F. G. Young of Cambridge reported that he was able to produce all the signs and symptoms of metahypophysial diabetes, except the changes in nitrogen balance, by injecting the growth hormone into dogs. The diabetes may persist after stopping the injections. Professor Tunbridge, who has treated 400 diabetic patients with the new insulins, listed the following disadvantages: they frequently block the needle; antiseptics reduce their activity; they are not useful in treating hypoglycemic states; there is difficulty in changing to them from other insulins; and they may produce cumulative action. The general opinion was that the insulin-zinc suspensions were unsuitable for unstable diabetic patients and that the difficulties mentioned made them unsuitable for most other patients with diabetes. In the discussion Dr. Joslin said that if a patient were doing well on any type of insulin he should not be changed to another.

Dr. M. Stahmann described work done in the United States to show that synthetic polypeptides, such as polylysine, could prolong the action of insulin without appreciably delaying its initial action. Somewhat revolutionary views on the nature of glucagon were put forward by Prof. G. E. Anderson of Brooklyn, who proposed that this was the trigger for the release of insulin in the postabsorptive state. Although it had itself a hyper-

glycemic effect, it potentiated the hypoglycemic action of insulin. Dr. Butterfield of Guy's Hospital, London, stated that dimercaprol improves the glucose metabolism in patients requiring large doses of insulin and in patients with burns but that it was to be regarded at present as a research tool and not as a therapeutic agent. It probably acts on the sulfhydryl groups in insulin. Dr. Oakley of King's College Hospital, London, stressed that not only arterial lesions but also neuropathy was responsible for diabetic lesions of the foot. He recommended conservative treatment, but if amputation must be performed it should be below the knee. Papers were read on hypophysectomy for severe diabetes by Dr. L. W. Kinsell of Oakland, Calif., and Dr. R. Luft of Stockholm, Sweden. This rather drastic treatment was limited to young diabetic patients with retinopathy and progressive vascular and renal disease. The hypophysectomized patient became more sensitive to insulin, and reversion of some of the diabetic complications occurred. If the patient could not maintain a normal blood urea nitrogen on an intake of 50 gm. of protein daily, the operation was contraindicated. Dr. J. C. Garbino of Uruguay reported the symptomatic improvement of diabetic retinopathy by the local application to the eye of a solution containing the pituitary melanotropic hormone.

Applied Bacteriology.—The Society for Applied Bacteriology held its first international symposium at Cambridge in July. Dr. K. W. Newell and his co-workers of the Central Public Health Laboratory, Colindale, London, described six outbreaks of Salmonella schottmülleri infection occurring in London, Windsor, and Basingstoke last year. Infection was traced to frozen eggs from China used as a cream filler in a London bakery. They were heavily infected with different Salmonella types. Dr. Newell favored pasteurization of all egg products. Dr. R. M. Fry and Dr. J. Boissard of the Public Health Laboratory, Cambridge, described an explosive outbreak of sore throat affecting 29 soldiers 36 hours after eating a meal. Infection was traced to custard prepared by a cook with a bad cough. It was shown that the streptococci isolated from the cook and responsible for the infection could survive on the skin of the custard. Eight outbreaks of micrococcic (staphylococcic) food poisoning affecting school children were investigated by Dr. Hobbs of Colindale. The vehicle of infection was mock cream prepared from spray-dried milk, which had become infected from human sources after heat treatment. Dr. W. Wilson of the Public Health Laboratory, Melbourne, reported an outbreak of typhoid due to phage type E1. The cases were widely scattered and not connected with known carriers in Australia. One of the victims of the outbreak was taken ill with food poisoning due to Salmonella senftenberg and subsequently was found to have typhoid. Careful investigation showed desiccated coconut imported from Papua to be the source of the infection. The authorities in Papua have now put a stop to production.

The largest outbreak of food poisoning due to Salmonella typhimurium yet recorded was described by Prof. H. Lundbäck of the Stockholm State Bacteriological Laboratory. Affecting 8,845 people, of whom 90 died, this outbreak was due to a strike of slaughterhouse attendants. The living quarters of the animals in the abattoir became overcrowded, and the infection was only controlled by closing the abattoir, cleaning it, destroying all carcasses, and segregating infected persons. One remedy would appear to be smaller slaughterhouses. Dr. M. Ingram and Miss E. Barnes of the Low Temperature Station, Cambridge, suggested the possible use of the broad-spectrum antibiotics for the preparation of meat. They could be used in animal feeds, injected before slaughtering, or incorporated in the processed meat. In the United States, however, such treatment is not acceptable, as antibiotics cannot be used in foodstuffs. An unusual case of food poisoning due to Bacillus cereus affecting 600 people was described by Prof. S. Hauge of Oslo. The main symptoms were abdominal pain, watery diarrhea, and nausea. The organism, isolated from flour, produced similar symptoms in volunteers.

Medical Research Council Annual Report.—In the report of the Medical Research Council for 1953-1954 (London, Her Majesty's Stationery Office, Cmd. 9506, 1955), Prof. J. S. Mitchell of Cambridge reports that a water-soluble vitamin K analogue is taken up preferentially by tumor cells and makes them more sensitive to radiotherapy. The mean survival time in 46 patients with inoperable lung cancer was only four months after radiotherapy. After injection of the vitamin K analogue at the time of radiotherapy the survival time in a comparable series was three times as long. Radioactivity damages living tissue largely because it breaks up water molecules. The best protection against this, so far, is cysteine, which will double radiation tolerance. Another protection against radiation is the injecting of normal splenic cells or bone marrow cells just after exposure. This increases survival after lethal doses of radiation.

Expletives in Dentist's Chair.—A female dentist who declined to treat a patient further because of his persistent use of objectionable language while having a tooth drilled by an assistant was ruled by the Middlesex Health Executive Council to have failed technically to comply with the terms of service. The council recommended that she should not receive the patient's contribution of $2.80. The patient said that when the drill touched a nerve he jumped up, waiting for the pain to subside. The dentist entered and asked him to leave immediately and cancel further appointments. After discussion the filling was completed. The patient denied using obscene language but said that he might have used a few mild expletives. Finding the dentist technically in breach by not requesting permission to withdraw from the case, the council commented: "The expressions used by the patient might have been his usual mode of speech. This case centers on differences of opinion between two contrasting temperaments."

Doctor Not to Pay Fine.—The workings of the National Health Service are illustrated by the following item. The Ministry of Health has informed the London Executive Council that the minister cannot direct the withholding of $85 from a physician as recommended by the council. The physician failed to comply with the terms of service about inspection of his premises and refused to accept notices about a meeting of the medical service committee inquiring into the case. The ministry wrote to the council saying: "It does not appear to the Minister clear that there has been a breach of the terms of service in that the respondent did not actually refuse admission to inspect his premises." The minister thought that there should be a further attempt to make an inspection. A failure by the physician to make arrangements for admission might constitute a refusal to permit inspection.

Physicians' Lists Inflated.—Lieutenant Colonel Lipton (socialist) asserted that the number of patients on National Health Service physicians' lists in the London area exceeded the population of London. He asked for a check of the records and less waste in paying capitation fees to physicians. The Minister of Health said that the number of patients on physicians' lists in London are not in excess of, but closely approximated, the total population and that there was a good deal of inflation in these lists. This does not affect the cost to the Exchequer, but he will review the lists anyway.

Incidence of Poliomyelitis.—Cases of acute poliomyelitis in England and Wales numbered 177 in the week ended July 23, according to the Registrar General, compared with 120 in the previous week and 99 in the week ended July 9. In the week ended July 22, 1954, there were 91 cases. On July 22 this year, 55 patients with poliomyelitis were admitted to Neasden Isolation Hospital on one day. Only one had the paralytic form. A spokesman of the Central Middlesex Hospital Group said: "We are not unduly alarmed. Measles is tapering off and poliomyelitis coming in; it is a seasonal increase."

Death from Barbiturate.—A pathologist said at a Birmingham inquest that a woman's death was caused by a sedative she was given at a mental hospital and that the treatment, although a recognized one, was dangerous. The psychiatric resident at the hospital said that the patient was kept in continuous narcosis. The treatment, involving in her case a dose of 0.5 gm. of a barbiturate, was admittedly dangerous but is one of the oldest treatments used in psychiatry.

Medical Records Exhibition.—The first Medical Records Exhibition was held in London in May by the Association of Medical Records Officers. It illustrated current methods of keeping and storing records and of marshaling patients. At Woolwich Memorial Hospital the whole of a patient's clinical record is photographed. At University College Hospital, microfilming has been resorted to, radiographs included. Existing storage space can also be made to hold more folders by using mobile stacks of shelving to reduce the circulating area required in the record store or lateral filing to increase the number of levels of shelving between floor and ceiling. At the Edgware General Hospital the outpatient cards are kept apart from the inpatient records and destroyed after 7 years; the inpatient notes are bound after one year and destroyed after 20 to 25 years, with the exception of summary sheets, a system that demands a high standard of summary writing. Surveys indicate that no patients return for the same condition after 15 years. Sound-recording facilities exhibited from the Hospital for Sick Children showed that dictation can now be recorded on disk machines in the typing room. Devices such as visible card trays have been found to ease the task of selection and control of waiting lists. A public health records exhibit featured a continuous health record kept from the antenatal period until school-leaving age. The Farnborough Hospital exhibit included a nightly ward return which served not only as a basis for bed statistics but contained a forecast of patient movements in the next 24 hours, this being used as a guide in dealing with applications for emergency admission. The value of graphs in the improved use of hospital accommodation was stressed on the King's College Hospital stand.

Epidemiologist.—In the *British Medical Journal* of July 30 J. R. W. Hay says that the epidemiologist has contributed much to the reduction of illness and its cost to the community. Cholera, typhus, typhoid, and diphtheria have been practically eradicated in this country. Curative measures account for about 95% of the Treasury's contribution to the National Health Service, the rising cost of which is a matter for increasing concern. A savings could be made if scarlet fever were no longer treated in an isolation hospital, except for occasional cases. Furthermore, the present undue emphasis on hospital midwifery seems to be a costly and possibly unhealthy trend. Although many obstetricians advocate hospital for most if not all confinements, all that the epidemiologist can say is that the risk of infection to both mother and child is much higher in the average hospital than in the average home. The empirical use of antibiotics before the organism causing the patient's illness is identified is another harmful and expensive practice, and mass miniature radiography can now be safely dispensed with, provided other diagnostic facilities, including small film apparatus, are adequate. The author would concentrate on vaccinating the school child with BCG to eradicate tuberculosis.

Doctor at Sea.—The young man who passed his exams so entertainingly in "Doctor in the House" now becomes a ship surgeon in the film version of Richard Gordon's "Doctor at Sea." Fleeing the ardent embraces of his principal's daughter, the tyro general practitioner gets a post on a small ship sailing to South America. An eccentric crew, the diffident doctor, and medical comforts provide clean fun aboard ship, while the South American port gives plenty of scope for showing that the improper study of mankind is woman. Here we meet the delightful Brigitte Bardot, a new French star, and Dirk Bogarde as the young physician is what every layman thinks a young physician should be. James Robertson Justice roars with convincing aplomb as the irascible captain of the ship. Romance, humor, and the discovery that some aspects of the practice of medicine are not in the textbooks combine here to give us a tonic with no trace of a bitter taste.

More Calories Consumed.—People in Britain last year used more butter, fat, eggs, sugar, syrups, fruit, cheese, meat, bacon, canned fish, tea, and cocoa than they did in 1953 but less milk, fish, poultry, flour, and vegetables. Provisional figures published in the *Board of Trade Journal* show that food eaten in 1954 represented an average per capita consumption of 3,120 calories a day, as compared with 3,000 calories in 1953, 2,950 in 1952, and 3,000 before the war.

Needless Dosing of Infants.—The *British Medical Journal* of July 16 includes a report by Dr. R. D. G. Creery on the questioning of the mothers of 200 children, aged 6 months to 3 years, who attended the Royal Belfast Hospital for Sick Children for BCG vaccination. Although apparently normal, 184 of these children had been given alkaline mixtures at some time. Magnesia had been given to 158, generally for the regulation of the bowels, and 133 had received carminatives, usually for "wind." Both magnesia and carminatives had been given to 107. The author believes that, although not actively harmful, the habit of dosing infants with alkalies is meddlesome and unnecessary and should be discouraged. These medicaments are not inexpensive and are often given for symptoms that exist only in the imagination of the mother. That their infants should defecate daily with absolute regularity amounts to an obsession with many mothers and seems to determine the frequent resort to magnesia. The crying fretfulness so often put down to flatulence may well be due to unsatisfied hunger for which carminatives are a poor remedy. One of the most popular of these mixtures contains about 4% of ethyl alcohol, a concentration not far below that of some brands of beer, stout, and cider.

Drug Used to Gain Courage.—The hope that the authorities would place Oblivon (Methyl Pentynol), known in the United States as Dormison, on the dangerous drug list was expressed by Justice Byrne, after he had been told that it could be purchased without a prescription. Two youths took Oblivon tablets to gain sufficient courage to burglarize a house at Ramsgate. After the burglary they stole a motorcycle and were involved in a crash in which one of them was killed. The surviving youth pleaded guilty to driving a motorcycle while under the influence of a drug, reckless driving, burglary, and theft. The prosecutor said that the two youths had bought 25 Oblivon tablets from a druggist. Although the normal dose is one or two tablets, the surviving youth had taken eight tablets in 24 hours. The effect was startling. When he broke into the house he had no sense of fear, and when he took the motorcycle, although he did not know how to drive, he had no sense of danger. The Poisons Board has now recommended that Oblivon should be classed as a poison, which may be sold only to persons known to the druggist, on a medical prescription, or on a police order, and that the purchaser must sign the poisons register.

Children in Hospital.—To reduce anxiety and help parents understand hospital regulations, the Central Middlesex Hospital gives a printed pamphlet to parents of children admitted. The pamphlet describes in simple terms the emotions of the child who is left in the hospital, and it makes some helpful suggestions. Daily visits are encouraged in order to increase the child's sense of security while in the hospital and to facilitate his readjustment when he returns home. These visits are restricted to parents who are advised not to promise to take the child home every time they see him but to tell him instead that he can come home as soon as he is better and that this is for the doctor to decide. Gifts of food are discouraged and, if candy is brought, it should be handed to the nurse who will pool all such gifts and share them equally among all the children on the ward after their meals. The pamphlet concludes: "Please don't listen to what your friends, neighbors, relatives, or other parents have to say about your child's illness. If you want to know how he is getting on, ask the nurse, and if necessary, she can arrange for you to see the doctor."

Blood Donors.—Blood donations to hospitals in England and Wales through the National Blood Transfusion Service in 1954 were higher than ever before. Last year 104,161 people gave blood for the first time, and by the end of December the total strength of the donors' panel was 540,389, an increase of nearly 25,000 as compared with 1953. To insure that no one need be asked to give blood more than twice a year, the National Blood Transfusion Service needs 650,000 regular volunteer donors.

Faith Healing.—The crowded chapel with the unscreened public in a state of mass hysteria is not the right atmosphere for spiritual healing, according to Dr. Weatherhead, president of the Methodist Conference, which convened in Manchester. Even though

everything is done to exclude unhealthy emotionalism, it is almost always there, just below the surface. In such a situation, temporary cures are easy and are widely publicized, whereas the subsequent relapse gets little or no publicity. Few experiences, however, can be more bitter to the patient, because he is led to believe that the relapse is caused by a loss of faith, or he may conclude that religion is no good, when the truth may well be that he has mistaken suggestibility for faith and has tried to take a short cut in the treatment of a hysterical illness. Many people have foolishly delayed medical, surgical, or psychiatric treatment, waiting for the visit of some healer who is here today and gone tomorrow.

MEXICO

Symposium on Obesity.—At the symposium on obesity held in Mexico City in July, Dr. S. Aceves of Mexico City said that obesity is produced by hyperalimentation in 95% of the cases. Extreme obesity may produce fatty infiltration and diminished contractility of the myocardium with consequent coronary insufficiency or heart failure. Increased body weight increases the work of the heart. An increased coronary supply is demanded to meet the requirements, but obesity predisposes to coronary disease. In a group of 80 soldiers between the ages of 20 and 36 years who died from coronary disease, 72 were overweight. Obese patients are predisposed to sudden death from pulmonary embolism or fatty infiltration of the myocardium. The grave complications of arteriosclerosis (coronary occlusion and cerebral thrombosis) are frequent in the obese because the arterial lesions are acute from the start. In the obese patient with cardiovascular disease, a diet poor in fat and in cholesterol, administered for an indefinite period, would be beneficial, but such a regimen is impractical. Heparin should be given.

Dr. R. H. Haddad of the Mexican General Hospital said that every gram of extra fat in the obese patient calls for an added kilogram of circulation. When such a patient must be operated on, preoperative reduction of weight should be vigorously attempted. Spinal anesthesia is preferred except in patients with a systolic pressure below 100 mm. Hg, a spinal disease, or extreme nervousness. The tissues should be handled gently, perfect hemostasis maintained, and as little foreign material as possible introduced. Touching of the venous plexuses is avoided if possible. Early ambulation should be encouraged.

Adiposogenital Dystrophy.—Dr. J. Chávez Montes of the National Faculty of Medicine stated that the short stature of patients with adiposogenital dystrophy (Froehlich's syndrome) seems to be due to deficient secretion of thyroid and gonadal growth hormones. In the case of Simpson's adiposo-adrenogenital-hypophysial syndrome, which occurs exclusively in young boys, the stature may be either normal or supernormal but with eunuchoid proportions. Morgagni-Stewart-Morel's and Laurence-Moon-Biedl's syndromes are usually associated with dwarfism and hypogonadism. Pituitary basophilism, adrenal cortical hyperfunction, and the Achard-Thiers's syndrome are characterized by corticosuprarenal adiposity, mainly of the head, neck, and trunk. These diseases appear in adults of normal stature. The adiposity is correctable by means of a proper diet. Bearded diabetic women may be either dwarfed or of normal stature. In patients with congenital athyreosis, thyroid extract causes improvement of the excessive weight, short stature, and retarded mental and physical development. A moderate degree of hyperinsulinism from pancreatic disorders can be the origin of an exaggerated adiposity and of diabetes mellitus. Gonadal obesity is characterized by accentuation of the fat distribution normal to each sex. The tendency to gain weight in the menopause is related to constitutional factors and not to gonadal activity.

Modification of Diet.—Dr. J. Q. Olascoaga of the National Institute of Nutrition stated that in obese children and young people the diet they are receiving when they are first seen in consultation should be continued because they are still growing. Only in rare cases is the diet modified, and then a minimum of 80% of the caloric needs of the patient should be given without reducing the protein, vitamin, or mineral intake. Obese adults may be given diets containing 30 to 60% of their caloric requirements provided liberal quantities of fresh milk; lean fresh meat; eggs; fresh fruits; fresh, uncooked, unsalted vegetables; and preserved fruits are given. Reducing diets should be adjusted in accordance with the age, work, climate, and economic condition of the patient. The sodium intake should be decreased and the potassium intake increased in obese patients with edema. Dr. S. Maynez Puente of the same institute said that in spite of the fact that the caloric value of normal diets has decreased since 1900, obesity has increased. This can be explained in part by the increase in life span, with consequent increase of the proportionate population in the older age group. Obesity is caused by an endocrine dysfunction in only 50% of the cases and by overeating in the rest. Toxicoses of pregnancy develop in 75% of obese women who are pregnant and in only 20% of those whose weight is normal.

SWEDEN

Mental Hygiene Reform.—In a memorandum to the Swedish government and to university, municipal, and other local authorities, the Swedish Medical Association and the Swedish Psychiatric Society have severely criticized the present state of affairs in the field of mental hygiene and have outlined an ambitious scheme for its reform. Even before the adoption of national health insurance at the beginning of 1955, the hospital and other social services were so effective that no one suffering from serious somatic disease had to fear neglect. It has been otherwise with mental disease. A large number of patients of the mental hospital are human beings whose diseases have become chronic because of defective welfare resources. Even those greatly in need of care cannot be accommodated, and frequently those who can be admitted cannot be treated adequately. Of a total of between 5,000 and 6,000 members of the medical profession, only about 400 are in the field of mental hygiene. Of these, 300 are employed in mental hospitals run by the state, municipal authorities, or psychiatric departments of general hospitals. Even at the cost of extending the medical curriculum by another month or two, provision must be made for more training in this particular field. The rate of remuneration for private practice in psychiatry must be raised. Research in psychiatry must be fostered. The memorandum is published in full in *Svenska läkartidningen* for July 22.

National Health Insurance.—At a meeting in May of the Jämtland County Medical Society, the working of the national health insurance scheme initiated at the beginning of this year was reviewed by a senior hospital surgeon, a district medical officer, and a private practitioner. All agreed that the clerical work, such as that entailed by the filling in of forms, had increased the day's work by about 10% at the expense of the medical care of the patient. As a result some overworked physicians now send more patients to the hospital for examination and treatment than formerly, and this means an additional burden for the hospital staff and an increase of the list of those awaiting admission. According to one calculation, the interval between application and admission has been increased by 25 to 33%. Care of the seriously ill patient is apt to be interfered with by a growing demand for the treatment of such minor ailments as birthmarks. Furthermore physicians are expected to decide whether a patient should get to the hospital by taxicab or by bus. Hospital laboratory work, already overburdened, has approached the breaking-point under present conditions. Various readjustments in the machinery of the scheme were called for, chiefly with a view to simplification of the clerical work imposed on the medical profession. The discussion is reported in *Svenska läkartidningen* for July 22, 1955.

Poliomyelitis.—Lindström and Grenhagen, in *Svenska läkartidningen* for July 15, reported that certain areas of Stockholm relatively free from poliomyelitis in 1953 were connected with beaches liable to pollution by sewage. On these beaches children could play and conceivably develop immunity to poliomyelitis. The authors of this study emphasize the quite tentative

character of their findings, and they admit that its value is limited by the facts that they have dealt only with the city of Stockholm and that their investigation was limited to only one year. In *Nordisk medicin* for July 14, H. Dagulf draws attention to differences in the incidence of poliomyelitis as it has affected the city of Stockholm or its suburbs. In the former there were only 66 cases per 100,000 inhabitants, whereas the corresponding figure was 179 in the latter. The difference might to some extent be due to the number of children in the former being comparatively low, but this does not explain why the morbidity rate among adults was twice as high in the suburbs as in the center of the city. Another remarkable phenomenon was the upward shift of the adult age group affected. Between 1911 and 1913, 82% of all the cases concerned the age group from birth to 15 years. In 1953 the corresponding percentage was down to 47, and the ratio of adult to child victims quadrupled. About 60% of all the cases were paralytic, and the case fatality rate was 3%. The incidence of paralysis was higher among adults than among children, being 65 and 57% respectively. Multiple cases in households were recorded at 19.5%, with 176 cases in 80 families.

SWITZERLAND

Swiss Hospital Service.—There are 535 hospitals in Switzerland for a population of 4,500,000. The university cities of Basel, Bern, Zurich, Lausanne, and Geneva are clinical centers with all the specialties. They serve areas exceeding the boundaries of their respective cantons. Next to them, in order of their importance, are the cantonal hospitals of Aarau, Lucerne, and St. Gall. The rest of the cantonal hospitals and district hospitals each have from 50 to 300 beds, and their importance is only local. The psychiatric establishments are almost all cantonal institutions having several hundred beds. The tuberculosis sanatoriums are located in regions chosen for their climate and have marked differences in size, legal status, and financing. The larger cantons have their own sanatoriums. The sanatoriums are located for the most part in Davos, Leysin, and Montana and have many foreign patients, chiefly French, German, Belgian, and English. In Switzerland the organization of a public health service is the responsibility of the canton or the commune; the federal government hardly participates at all in hospital activity —the two big federal insurance companies, the Swiss National Fund in Case of Accidents and the Federal Military Insurance, do not have their own establishments. The central government does, however, participate actively in the fight against tuberculosis by granting subsidies to antituberculosis insurance and by contributing to the costs of treatment. There are also a number of private hospitals, many of which are connected with a particular religion. The other establishments that function as private enterprises are dying out.

Diversity of Service.—The Swiss hospital service reflects the diversity of the Swiss Confederation. There is no central directing idea in it, owing to the absence of a central coordinating power. Switzerland has 74 beds for each 10,000 inhabitants. The canton of Basel-City heads the list with 148 beds per 10,000 persons. Even before the last war, population growth and the success of treatments undertaken in hospital had forced the hospitals to enlarge. For about 10 years, the hospitals have been in a stage of great expansion. About 100 enlargements and constructions of new buildings were approved between 1940 and 1954, and the necessary credits granted amounted to 500 million Swiss francs. Zurich heads the list with a credit of about 200 million. The shortage of beds is due, in Switzerland, in part to aging of the population. Hospitals keep a number of patients over long periods, in spite of advances in therapy that speed recovery, and often have to care for patients with chronic disease indefinitely. The creation of rest homes is being considered. These would be simpler in set-up and would take the pressure off the hospitals. The financial situation of Swiss hospitals is difficult. The total deficit of all the hospitals is estimated at 100 million Swiss francs yearly. The price of one day's hospitalization varies according to the class of the establishment. The university hospitals are the costliest because of their larger staffs and and the expenses of research and teaching. The daily cost there is about 30 francs, as compared with 20 to 25 francs in the larger cantonal hospitals. A ward patient is not in a position to pay such amounts, and insurance companies cannot afford more than 10 francs a day toward the cost of each patient. The average amount paid to the hospital a day from ward patients is between 10 and 15 francs each. This accounts for the deficit.

Hospital Expenses of Cantons.—Since the hospitals vary so from canton to canton, the expenses of each canton also vary. The university cantons have the highest expenses. The absence of a central plan leads to some injustices in the hospital system. The university cantons finance research and teaching; in other words, they pay for the training of physicians who practice in all the cantons, but in some of the larger cantons, namely Zurich, Bern, Vaud, and Neuchatel, an effort is being made at systematization. The cantons of Basel-City and Basel-Country are a splendid example of intercantonal cooperation. Basel-Country has given over its hospital care to Basel-City and in return is paying large subsidies to public and private hospitals. One of the most important problems that has yet to be solved nationally and in the individual cantons is rehabilitation. This is a social responsibility that has led to remarkable achievements with regard to disabled veterans in France, England, the United States, and Russia. In Switzerland, there is an impressive attempt at coordination in the fight against poliomyelitis. Thus the general tendency now is for the cantons and communes to assume the burden of the increased costs in hospitalization.

Another difficult problem is that of lack of hospital personnel, because the pay of hospital employees is low compared with that of other places of employment. The wave of Italian, German, and Austrian help that is flooding the entire Swiss economy has extended to hospitals. Despite increases in actual salaries, lack of personnel makes itself felt in hospitals, especially with regard to the nursing and domestic staffs. While the Swiss hospitals permanently employ 200 to 300 foreign nurses, mainly Germans, about twice as many Swiss nurses are working abroad, where they are highly prized because of their qualifications. In spite of a propaganda campaign and the modernism of schools of nursing, the number of girls entering nurses' training is smaller than it should be, even though the financial conditions have been bettered. Hospitals must function often with inadequately trained help—nurse's aids and auxiliary nurses —because of the shortage of nurses. The worst effect of the scarcity in hospital personnel is that it has been impossible to introduce the 54 hour week, in spite of the good will of those interested. It has been necessary to maintain the 60 hour week.

TURKEY

Placenta Previa Accreta.—In the *Bulletin of Istanbul University Medical Faculty* (vol. 14, no. 3) Erez and Arisan reported on two patients with placenta previa accreta. A 37-year-old primipara had a hemorrhage during her seventh month of pregnancy. Five, three, and two years prior to admission she had had induced abortions. Twenty-eight days after admission a severe hemorrhage occurred and a cesarean section was performed. The child was born alive. The placenta previa centralis adhered so closely to the uterine wall that it was impossible to find any line of cleavage for placental separation. Attempted separation resulted in laceration of the myometrial serosa, and a total hysterectomy was performed. In microscopic examination, extensive diffusion of villi was noted in the placental serosa. The second patient was 32 years old. Three years prior to admission she had a normal delivery. Five, four, and two years before admission she had abortions (two spontaneous and one induced). She was eight months' pregnant when the mild painless hemorrhage for which she was admitted occurred. She had a sudden severe hemorrhage 24 hours after admission, and cesarean section was performed. The child was born alive. Because the close adherence of the posterior and lateral segments of the placenta prevented manual separation, a total hysterectomy was performed. Microscopic examination revealed that masses of villi had invaded the placental tissue.

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CORRESPONDENCE

AMPHETAMINE IN MANAGEMENT OF ORDINARY (SYDENHAM'S) CHOREA

To the Editor:—The purpose of this communication is to point out the effectiveness of amphetamine for the relief of overactivity, restlessness, and involuntary movement in ordinary (Sydenham's) chorea. Review of a number of articles on chorea reveals that this drug, which I have found helpful, has not received recognition for its usefulness in this connection. My attention was first drawn to the possibilities of amphetamine in ordinary chorea by my experience with the following case.

The patient was a 16-year-old girl with a chief complaint of uncontrollable movements. These had become increasingly more severe over a period of one month. During this period, the patient had also become increasingly more irritable. She was overemotional, overactive, unreasonable, and so difficult to manage that she was considered to be psychotic and admitted first to a psychiatric unit. The medical history included frequent attacks of tonsillitis, with three recurrences during the month prior to the onset of her chorea.

Examination revealed almost continuous choreiform movements of the face and extremities. There was generalized hypotonia, with pendular reflexes and "silver fork" posture of the hands. The heart was normal. The temperature was normal, blood cell count and urine normal. The sedimentation rate was slightly elevated (31 mm. per hour corrected).

During the first four days after admission, the patient was treated with phenobarbital, 512 mg. per day, and was kept isolated and with minimum stimulation. Throughout this period she continued to be irrational and extremely restless, there being no evident change in her condition. On the fifth day, amphetamine sulfate, 15 mg., was given in addition to phenobarbital, 512 mg. On the sixth day, because of a favorable response, the amphetamine dosage was increased to 30 mg. per day. This dosage was continued, and the phenobarbital dosage was gradually reduced to 96 mg. per day by the 10th day and its use was discontinued on the 16th day. The patient's response to amphetamine was striking. Within 24 hours of the first dose she became quieter and more reasonable. Her restlessness was reduced, although definite choreiform movements continued. The patient was permitted to go home on the 17th day and continued to take amphetamine for a month at home, experiencing a gradual reduction of her choreiform movements to normal. In this original patient, it was not clear to what extent improvement was due to withdrawal of barbiturates and to what extent to the result of amphetamine. However, an additional six patients have now been treated, and this additional experience suggests that in this condition amphetamine itself has a beneficial and quieting effect.

The following case is another example of severe ordinary chorea benefited by amphetamine. The patient was an 11-year-old girl who had had an attack of ordinary chorea three years previously. At that time, treatment with sedation over a period of five days did not bring about improvement. She was given a course of fever therapy (typhoid), and over a period of 10 days gradually improved. However, at the end of this time, she was still confined to a wheel chair and could not write her name. Two weeks later she continued to be overemotional and showed definite chorea. Three weeks later, she seemed entirely well. She was subsequently admitted to the pediatric service of Dr. Weston Kelsey with a recurrence of her chorea. At this time she had definite evidence of cardiac involvement. The temperature, blood cell count, and urine were normal. The sedimentation rate was moderately elevated (33 mm. per hour corrected).

At the time of admission, the patient was overemotional and restless. She exhibited constant violent choreiform movements. Her movements were so incoordinate as to make it impossible for her to feed herself. Her speech was almost unintelligible. On the first day after admission she received phenobarbital, 128 mg., with no change in her condition. The following day therapy with phenobarbital was stopped and she was given amphetamine, 10 mg. The following day she was strikingly improved. Feeding continued to be difficult, but the patient was now able to handle a fork, requiring assistance only with liquids. She was able to write fairly well. Her speech improved markedly. Whereas previously she was depressed, her attitude became cheerful and relaxed and she rested well at night. After striking improvement with this medication, the condition became stationary after about four days, and it was evident that the actual course of the disease had not been altered. However, by the end of 12 days, she was showing only moderate choreiform movement, being able to write, feed herself, and move about with little disability.

It must be recognized that ordinary chorea is a disease exhibiting a variable course. The possibility that spontaneous remission may occur at any time must be considered in evaluating any recommended therapy. However, experience with the use of amphetamine in these two reported cases and four other similar cases strongly suggests that the drug has an important place in treatment. It does not produce overactivity. On the contrary, it has seemed to reduce restlessness, irritability, and involuntary movement. It is particularly valuable as an aid in the management of mentally disturbed or psychotic patients.

RICHARD L. MASLAND, M.D.
Professor of Neurology
Bowman Gray School of Medicine
Winston-Salem, N. C.

CONTACT DERMATITIS DUE TO CHLORPROMAZINE IN A DENTIST

To the Editor:—Lewis and Sawicky (*J. A. M. A.* **157:**909 [March 12] 1955) in a report on two cases of contact dermatitis due to chlorpromazine (Thorazine) in nurses handling it advise that because of its extensive use, the danger of sensitization on frequent or long-continued contact must be kept in mind by both physicians and nurses. Our patient, a dentist working with psychotic patients at a state institution, developed a dermatitis of the fingers that contacted the saliva of patients who had been and were under treatment with daily doses of chlorpromazine as high as 1,000 mg.

The patient was first seen July 27, 1955. Five days previously she had noticed a patch of dermatitis on the right hand. Within the next few days she had an erythematous, exudative, crusted eruption of the dorsal terminal phalanges of the second, third, and fourth digits of both hands, more severe on the left. The palmar aspects were not involved. She had been treating the teeth of mental patients who had been receiving massive doses of chlorpromazine. Undoubtedly the drug excreted in saliva and present in traces in those patients treated with it orally sensitized her. A patch test with an aqueous solution of chlorpromazine caused itching within five hours, and an area of erythema and edema appeared and persisted at the test site for several days. Her hands responded to appropriate therapy with grenz radiation in 10 days. She was able to return to work using a protective silicone cream (Kerodex 76).

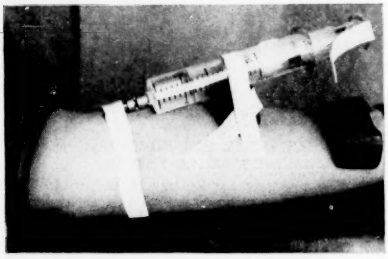
According to Lewis and Sawicky, as reported by the pharmaceutical firm manufacturing Thorazine, patch testing of 50 individuals showed no irritation or sensitivity. However, in the testing, daily and prolonged exposure to it as in this case, and in nurses and physicians, was not considered. With the increasing use of chlorpromazine, individuals constantly handling it or coming in contact with drug-laden secretions of patients under chlorpromazine therapy should be aware of the possibility of epidermal sensitization and institute means to prevent or minimize contact with it.

FRANK C. COMBES, M.D.
MILTON REISCH, M.D.
104 E. 40th St.
New York 16.

RUBBER PROP FOR SYRINGE USED FOR INTRAVENOUSLY GIVEN ANESTHESIA

To the Editor:—Although many ways have been devised for the intravenous administration of anesthesia, the simplest method, the syringe and needle technique, remains very popular. Usually, a 20 cc. syringe is selected for the giving of the dilute barbiturate solution. A freely miscible muscle relaxant such as Syncurine may be included without complication of the method. A syringe prop is advantageous in two ways. If the hospital does not furnish eccentric-tip syringes, the prop, with the help of a few well-placed adhesive strips, will hold a regular syringe slanted at the right angle so that the needle tip remains securely placed within the lumen of the selected vein. With either the eccentric tip or a regular syringe, the prop makes the plunger most accessible to the fingers as the serial injections are given. It also facilitates manipulation of the tape used to restrain the plunger to prevent the backflow of blood.

An impromptu prop of gauze and adhesive tape is quite serviceable, but a special rubber one is even more satisfactory. This is easily made from a half of a rubber stopper measuring 2 in. across the top. Shaping is done in a vise by means of a knife and rasp and requires but a few minutes. This syringe prop fits and clings to the forearm. If it is fixed to the skin by a separate piece of 0.5 in. tape (see figure), the maneuver of switching syringes is made easy. When the rubber tubing of an



intravenous drip set is punctured for the purpose of giving anesthesia, the prop assists in the technique. The prop is readily cleaned and will last for years.

GLENN J. POTTER, M.D.
1332 S. Hope St.
Los Angeles 15.

THE DOCTORS FLINT

To the Editor:—A long medical dynasty has come to an end, and it would seem appropriate to publicly acknowledge medicine's debt to a famous family. On July 20, 1955, Dr. Austin Flint died in the Doctor's Hospital in New York City at the age of 87, having in his time been professor of obstetrics at Bellevue Hospital Medical College and later at New York University when these institutions amalgamated. He also had held several important consultant posts. A graduate of Phillips Academy, Andover, Mass., and of Bellevue Hospital Medical College, he also held an honorary master's degree, given him by Princeton in 1894.

Four physicians bore the name of Austin Flint. There were, in addition, other physicians in the family. The first Flint to study and practice medicine was Edward (1733-1818), who spent his life in Massachusetts. One of Edward's sons was the first Dr. Austin Flint (1760-1850), who witnessed the surrender of Burgoyne and took part in quelling the Shays Rebellion. He, too, spent most of his life in Massachusetts. As an example of his reputation as a physician he was granted, I am told, an honorary M.D. degree by Harvard. One of his sons, Dr. Joseph Henshaw Flint (1786-1846) was next in line and was also honored by Harvard in the same manner. Dr. Joseph's first-born was Austin (1812-1886), graduate of Harvard Medical School in 1833, co-founder of the Buffalo Medical College, founder of the *Buffalo Medical Journal*, and professor of medicine for brief periods at Rush, Louisville, and New Orleans. He spent the greater part of his professional life at Bellevue. It was this Austin who described the Austin Flint murmur and who wrote several celebrated textbooks. In addition to many other honors, he served as president of the New York Academy of Medicine, and in 1884 he was President of the American Medical Association. He was, indeed, one of the greatest of American physicians.

Austin III (1836-1915) graduated from Jefferson in 1857, became professor of physiology at Buffalo, and later assumed the same post at Bellevue. His textbook on physiology was a standard work for years, and he gained an international reputation in experimental physiology, particularly in studies on the urine and on muscle. His interest in the physiology of the brain led him to a high reputation as an alienist. Now his son Austin IV (1868-1955) has gone, and there is no direct descendant in medicine who bears the honorable name of Flint. There cannot be many families with six physicians in direct succession, and certainly there are few families that have done as much for American medicine.

EDMUND E. SIMPSON, M.D.
2615 Eye St.
Sacramento, Calif.

ATARAKTOS

To the Editor:—In an interesting commentary (THE JOURNAL, Aug. 20, page 1461) Dr. Howard D. Fabing proposes the "tranquilizing agents," i. e., Rauwolfia serpentina, derivatives therefrom, chlorpromazine, and frenquel, be designated as ataraxics, the latter term being derived from the Greek word *ataraktos*, meaning freedom from confusion and peace of mind. It should be of interest to Dr. Fabing as well as readers of THE JOURNAL that some months ago the name Atarax was assigned to the compound 1-*p*-chlorobenzhydryl-4,2-(2-hydroxyethoxy)ethyldiethylenediamine hydrochloride by Dr. F. Martin, Union Chimique, Brussels, Belgium. Atarax, a close chemical relative of both Meclizine and Buclizine, is neither a good antihistaminic nor a good antiemetic agent as are the latter two compounds but has shown promise in Europe as a less toxic substitute for chlorpromazine.

ROBERT O. BAUER, M.D.
Department of Anesthesiology
Roswell Park Memorial Institute
Buffalo 3.

RESEARCH ON MUSCULAR STRUCTURE AND FUNCTION

To the Editor:—Having opened a laboratory for the examination of muscles in Budapest in May, 1955, we would appreciate receiving reprints on muscular structure and function and related subjects from anyone engaged in this type of work. We are especially interested in the reactions of the body through functional changes in muscles.

ENDRE SZIRMAI, M.D.
Eörs Bajusz
Véralvadáselettani
És Gyakorlati Izomvizsgáló Laboratórium
(Laboratory for Coagulation of Blood and
Practical Examination of Muscles)
IV Árpád-Ut 124-126
Budapest, Hungary

ELECTRONIC TONOMETER

To the Editor:—The interesting editorial "Electronics in the Service of Medicine" in the June 25, 1955, issue of THE JOURNAL, page 656, did not mention the electronic tonometer, which has contributed so much to the better understanding of intraocular fluid circulation and glaucoma.

K. W. ASCHER, M.D.
2914 Vernon Pl.
Cincinnati 19.

LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Chiropractors: Injury to Spinal Meninges During Adjustments.—The plaintiff filed suit for damages against the defendant chiropractor for having negligently caused the death of his wife. From a judgment in favor of the plaintiff, the defendant appealed to the Springfield court of appeals, Missouri. The plaintiff's wife was suffering from a stiff neck, eye trouble, and occasional headaches. She consulted her family physician who gave her a thorough examination and told her that she was suffering from muscular strain and that she needed spectacles. Thereafter, on the advice of a neighbor she went to see the defendant chiropractor. He told her that she had some misplaced vertebrae. The plaintiff, who was present when the defendant examined and treated his wife, testified that the defendant had his wife lie face down on a self-tripping (high-lo) table and that he commenced manipulating her spine, proceeding upward toward her neck. The defendant then adjusted the table top to a perpendicular position, with the patient standing facing the table top, and asked her to see how far she could move her head to the right and to the left. After she demonstrated this point, the defendant grabbed her head and jerked it violently in one direction and then in the other. Each time something popped, and the patient screamed. She then said several times, "I'm falling," but the defendant proceeded to gouge and punch her neck and to roll her head around. The patient was then helped to a chair by the defendant and her husband. She could not hold her head up, her face and hands were numb, and she began to vomit. She said that she did not hurt anywhere, but apparently she was in convulsions. She was helped to a cot, where she continued to vomit and was without control of her movements. Subsequently, the defendant summoned a physician from a nearby office who recommended taking the patient to a hospital. This was immediately done, but the patient remained in much the same condition until she died about 18 hours later.

The physician whom the defendant had called filled out a death certificate indicating the cause of death to be a ruptured congenital aneurysm. A few weeks later the plaintiff had his wife's body exhumed for the purpose of an autopsy. A complete autopsy was made, including an examination of the peritoneum, liver, pleural cavities, lungs, heart, pericardium, heart muscles and valves, aorta, abdominal aorta, kidneys, uterus, brain, membranes, and blood vessels. A portion of the spinal column, consisting of the atlas, axis, and third cervical vertebra, was removed for a separate examination. The autopsy revealed that there was only one condition in the body that could have caused death and that that was an injury to the spinal meninges resulting in intraspinal bleeding and compression of the spinal cord. The examination failed to show a displacement of any of the vertebrae. This opinion was corroborated by another pathologist who examined the removed specimen. The expert witnesses at the trial gave their opinion that the injury could have been caused by the defendant's actions in manipulating the deceased wife's head and neck. Neither the autopsy nor any other evidence corroborated the original diagnosis of a ruptured congenital aneurysm. Two chiropractors, qualified at the trial as expert witnesses on behalf of the defendant, testified that the defendant had done nothing in treating the deceased woman that was not in accordance with the accepted practice of chiropractors generally in that community. One of them admitted, however, that if the adjustment were properly made there would be no chance of injuring a patient.

The defendant first urged that the plaintiff had failed to show that he had acted negligently. The court held that, although the defendant's witnesses had denied that the defendant had done anything other than what was considered as acceptable practice, the jury was not bound by such testimony. From the facts of the case, as presented by the plaintiff's witnesses, the jury could conclude that the defendant must have acted negligently, even though no expert witnesses stated an opinion to that effect. From the further fact that there actually was no displacement of the deceased woman's vertebrae and that the defendant continued his manipulations after the patient evidenced pain, a lay jury could conclude that the defendant did not act in accordance with the accepted standard of practice among chiropractors generally in that community. When a drastic injury occurs to an otherwise healthy portion of the body as a result of chiropractic manipulations, said the court, a jury may conclude that the manipulator acted negligently. The defendant also argued that the plaintiff had failed to show that the injury to his wife resulted from his manipulations. The court rejected this argument since the facts showing the continuity of events indicated that the defendant's acts constituted the causative factor, that there was testimony by competent witnesses to the effect that the injury could have been caused by the defendant's acts, and that the evidence failed to show any other events that might have caused the condition leading to the death of the plaintiff's wife. Other contentions of the defendant were overruled, and the judgment against the defendant chiropractor was accordingly affirmed. *York v. Daniels, 259 S. W. (2d) 109 (Mo., 1953).*

Governmental Hospitals: Liability of Hospital District for Burns Negligently Inflicted on Paying Patient.—The plaintiff filed an action for personal injuries, alleging that while she was a patient in the defendant's hospital she suffered severe burns due to the negligence of the hospital's agents in carelessly applying hot water bottles to her legs when she was under anesthesia. The trial court dismissed the complaint for failure to state a cause of action, so the plaintiff appealed to the Supreme Court of California.

The defendant hospital district was organized under the California Health and Safety Code, which provides for the creation of such hospital districts with the approval of a majority of the voters of each district. The statute provides that the hospitals owned or leased by the districts are to be operated in the best interests of the public health. They may not render professional services but may contract for such services with physicians and surgeons, provided that no profit or gain accrues to the district as a result of such contracts. Rates are to be established that will, so far as possible, make the hospitals self-supporting. The districts also have the power to levy taxes.

The Supreme Court held that the defendant hospital district was a public agency performing a governmental function and was therefore immune from suit without consent of the state. It was further held that such consent had not been given in California, notwithstanding the existence of a statute that set up a procedure for suing the state in a tort. That statute was construed as not extending the tort liability of the state but as providing a procedure for suit where the state was liable under existing rules of law. The Supreme Court said that the district was created primarily for the purpose of protecting the public health, especially in rural areas where the cost of private hospitals would be prohibitive, and that the fact that fees were charged for the services of the hospital did not affect the governmental nature of the function performed. The judgment dismissing the plaintiff's complaint was accordingly affirmed. *Talley v. Northern San Diego County Hospital District, 257 P. (2d) 22 (Calif., 1953).*

Malpractice: Application of Res Ipsa Loquitur.—The plaintiff filed suit for malpractice against the defendant physician. From an adverse judgment he appealed to the Supreme Court of Washington. The plaintiff visited the office of the defendant physician to determine the cause of an excessive amount of phlegm in his throat. At the time of the visit, the plaintiff's voice was clear and normal. The defendant's examination disclosed two small growths on the plaintiff's vocal cords near their apex. These growths were subsequently removed, and immediately thereafter, and up to the time of trial, the plaintiff's voice became hoarse, low-pitched, and difficult to understand, so that he was unable to continue his employment.

On appeal, the plaintiff argued that the defendant's negligence was so grossly apparent that no further evidence was necessary. The Supreme Court rejected this argument. The Court held that as a general rule the negligence of a doctor can be established

only by expert medical testimony. A doctor is deemed negligent only if he departs from the normal standards of practice of his community. The standards of the community in question and the question of whether or not the defendant departed from them can be established only by expert medical testimony. Furthermore, said the Court, the cause of the plaintiff's voice condition was a medical cause, and proof of a medical cause must be made by medical experts. The only exception to the rule requiring expert medical testimony is that class of cases in which the doctrine of *res ipsa loquitur* is applied—that is, cases in which the doctor's negligence is so apparent that the negligence can be easily recognized by the laymen on the jury. The Court held that this case did not involve negligence so apparent that expert testimony was unnecessary. Accordingly, the Court affirmed the judgment in favor of the defendant physician. *Nelson v. Murphy, 258 P. 2d 472 (Wash., 1953).*

MISCELLANY

MEETING OF PAN AMERICAN HEALTH OFFICIALS

Directing Council.—The eighth meeting of the Pan American Sanitary Organization's directing council was held in Washington, D. C., in September under chairmanship of Dr. Hector A. Coll, Director General of Public Health in Argentina. The council, composed of delegates from the 21 American republics and France, the Netherlands, and the United Kingdom on behalf of their territories in the Western Hemisphere, meets annually to review the work of the Pan American Sanitary Bureau. Dr. Juan Allwood Paredes, Director General of Public Health in El Salvador, and Dr. Bernardo Henao Mejia, Minister of Public Health in Colombia, were elected vice-chairmen. A budget of $2,200,000 was voted for the year 1956 for continuation of the health programs to be carried out with the guidance of the bureau; also available will be $1,181,365 already allocated to this region by World Health Organization for 1956 and other funds, notably from this region's share of technical assistance money apportioned to WHO by the United Nations, and funds allocated for public health work by the United Nations International Children's Emergency Fund. These funds will be used in about 130 integrated public health programs to be carried out by member governments with the technical assistance and orientation of the bureau.

Long-Range Health Programs.—The council, noting that several member governments have already drawn up plans for their public health programs and budgets for the years 1957 to 1960, urged others to take similar action. The 130 projects to be implemented by the bureau in 1956 cover practically all phases of public health in the Americas. Many are a continuation of existing projects, some of which will be carried forward for several years. Training and education will continue to be an important aspect of the sanitary organization's activities. In the coming year more than 300 fellowships will be granted by the bureau in connection with specific projects, and a number of seminars will be arranged to facilitate the interchange of ideas among health officials of the various countries. Several representatives emphasized that eradication of communicable diseases amenable to such treatment is far cheaper in the long run than the continuous control measures that have been the general rule.

Malaria Eradication.—This year the bureau established a coordination office for the malaria eradication program, with headquarters in Mexico City, Mexico, to coordinate the total continent-wide malaria eradication program. The concept of hemisphere-wide eradication was supported by the council. In reports presented by nearly all representatives on the status of their national antimalaria campaigns, emphasis was placed on the necessity to attack the Anopheles mosquito on a broad front before it develops resistance to the residual insecticides. Malaria is a growing problem where industries are established in malarious regions or where industry draws workers from infested areas. About 300 million cases of malaria still occur annually throughout the world, taking a yearly toll of 3 million lives. Although malaria eradication has been universally accepted, much work and large sums of money will be needed before it becomes a reality. The main burden and responsibility for the program will continue to rest with national governments, with a need for substantial help from international sources.

Yaws and Other Diseases.—The eradication of yaws in Haiti is now practically accomplished. The bureau will assist other governments in yaws eradication during the coming year. This crippling disease still causes untold suffering and economic loss in a number of countries in the Americas and in several islands of the Caribbean. Campaigns aimed at the eradication of smallpox, venereal diseases, and the Aedes aegypti mosquito were also among programs approved for the coming year. Tuberculosis control, environmental sanitation, public health nursing, maternal and child health, and nutrition are included in other projects. Tuberculosis, which used to be the worst killer in many countries, is now being brought under control, and its eradication may be envisioned for the future.

Director's Report for 1954.—The annual report of the bureau director, Dr. Fred L. Soper, was approved by the council. It made a comprehensive survey of the projects in which the Pan American Sanitary Bureau had collaborated with the various health administrations throughout the Americas. These included 77 national health programs in 27 countries and territories, 30 intercountry and continent-wide health programs, and 6 interregional projects. The bureau's work may be divided roughly into three categories: (1) work in connection with the communicable diseases, with emphasis on eradication; (2) strengthening of national public health administrations and coordinating of all services contributing to the health of the population (integration); and (3) training of personnel (education).

Executive Committee.—The seven-member executive committee, which acts as the sanitary organization's governing body when the council is not in session, held brief sessions before and after the council meeting. This year Brazil, Haiti, and Panama completed their three year terms and the directing council elected Bolivia, Cuba, and Nicaragua to fill the vacant seats. Dr. Jiménez Gandica of Colombia was elected chairman of the committee, until its next meeting in April. The four other members are Argentina, Colombia, Paraguay, and the United States.

MEDICAL FILM REVIEWS

NEW FILM ADDED TO A. M. A. MOTION PICTURE LIBRARY

The Heart—How It Works: Health and Safety for You Series: 16 mm., black and white, sound, showing time 12 minutes. Educational consultants: Harold S. Diehl, M.D., and Anita Laton, Ph.D. Produced in 1955 by Audio Productions, New York, for the McGraw-Hill Book Company. Procurable on loan (service charge $2) from Committee on Motion Pictures and Medical Television, American Medical Association, 535 N. Dearborn St., Chicago 10.

This film, by magnified sound, shows how a normal heartbeat sounds through a stethoscope. It then illustrates the structure of the heart, shows the function of its parts, and traces the flow of blood through the heart. Ways of examining the heart and facts about its work load are also given. Some suggestions are made on how to maintain a healthy heart. This film gives an idea of how the heart works and presents astonishing figures about its performance. It is commendable that too much material is not covered. The diagrams showing the action of the heart and the x-rays of the heart are excellent. This is a short, attractive film and is recommended for high school students and adult audiences.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Evaluation of the Calibrated Displacement, Velocity, and Acceleration Ballistocardiograph in Angina Pectoris. J. E. Smith, L. G. Lederer and J. C. Mandes. Am. Heart J. **49:**344-359 (March) 1955 [St. Louis].

Twenty patients with angina pectoris were studied with resting electrocardiograms, exercise electrocardiograms, and the calibrated bar magnet ballistocardiograph that measures the displacement, velocity, and acceleration components of body motion simultaneously. The ballistocardiograms of 8 of the 20 patients are described in detail. The ballistocardiograms of all 20 patients showed consistent evidence of abnormality. The resting electrocardiograms were frequently normal or nonspecific. The exercise electrocardiograms were positive in only 50% of the patients. The ballistocardiogram thus was a more sensitive index of abnormality than the electrocardiogram. However, the techniques of measuring motion must be reemphasized. The concept of motion measurement should involve the following principles. Instrumentation should have a linear frequency response from ⅓ of a cycle to at least 16 cycles. Calibration of signal output should be attempted, since amplitudes will not be amenable to comparison among clinicians unless this is done. The motion to be measured should approach a single degree of freedom concept and the distortion produced by the instruments kept at a minimum. There should be no ambient vibration interference from the buildings or ballistocardiograph tables to which the instruments are coupled. The results of the authors' study indicate that definite patterns of abnormality can be obtained in most patients with angina pectoris caused by coronary heart disease if instrumentation and techniques are utilized that fill the demands of proper motion measurement. The diagnostic value of signal differentiation (acceleration) was shown in emphasizing abnormality of form.

A Technique for Recording Carotid Artery Pulsations with Special Reference to Aortic Stenosis. J. E. Smith. Am. Heart J. **49:**428-436 (March) 1955 [St. Louis].

In 16 patients with aortic stenosis, pulsations of the carotid arteries, which are easily accessible and close to the centrally generated anacrotic vibrations resulting from aortic stenosis, were recorded through the skin and subcutaneous tissue over the carotid arteries in the neck. A cup was placed over the carotid arteries that could be firmly applied by means of a wooden halter-type neckpiece with an adjustable clamp. A piece of flexible rubber tubing from the cup on the neckpiece was led into a crystal-type pickup that produced an electrical signal proportional to pressure changes in the tubing. Clinical studies indicated that a tubing length of 4 ft. would be ideal. A simple type of differentiation of the signal could be accomplished by utilizing the natural frequency of the air column in the system of closed elastic tubing. This technique is, in essence, the application of a simple Helmholtz resonator. Results showed that it can be used effectively to emphasize the anacrotic vibrations of aortic stenosis when adjusted to the proper frequencies. Of the 16 patients, 12 had "pure" stenosis of the aortic valve, two aortic stenosis and concomitant aortic insufficiency, and two aortic stenosis and probable mitral stenosis. There seemed to be no direct relationship of the amplitudes of anacrotic vibrations to severity of the stenosis. While this is extremely difficult to quantitate, the analysis of functional ability and the ballistocardiograph would indicate that the compensatory myocardial factors are as important as the severity of the stenosis in the production of these vibrations. It is suggested that the amplitudes of recorded vibrations are related to the ability of the left ventricle to accelerate blood forcefully, and thus the forces generated during ventricular systole against a stenotic orifice play an extremely important part in the amplitudes of anacrotic vibrations. These factors seem to be as important as the severity of the stenosis in the cases studied. In patients with aortic stenosis, techniques of pulse tracing and recording instrumentation should be carefully evaluated before any attempt is made to determine physiological significance.

Tuberculous Pleurisy with Effusion. J. A. Myers. A. M. A. Arch. Int. Med. **95:**191-201 (Aug.) 1955 [Chicago].

The observations reviewed by Myers were begun in 1920 and were made mainly on groups of school children, university and nursing school students, and persons of various ages in chest clinics and private practice. Tuberculous pleurisy with effusion occurs in persons who have no demonstrable clinical pulmonary tuberculosis and is usually caused by subpleural lesions resulting from focalization of tubercle bacilli after their first invasion. Pleurisy with effusion is usually an allergic phenomenon, the tissues having become sensitized to tuberculoprotein during the first weeks after the initial invasion. Many effusions develop within a few months after the allergy is established. However, they may appear decades later. They occur among tuberculin reactors of all ages from infancy through senility. This report includes 260 persons who had clinically diagnosed tuberculous pleurisy with effusion. None had demonstrable evidence of pulmonary reinfection type of tuberculosis when pleurisy appeared. All reacted to tuberculin, and all had 300 or more cubic centimeters of fluid that was demonstrable by x-ray film inspection. Although recovery of tubercle bacilli is the only incontrovertible diagnostic criterion, they were found in only 76 of this group. In another 116 in whom aspiration was done, organisms were not found, and aspiration was not carried out on the remaining 68 patients. It is now recommended that as much fluid as possible be removed and studied bacteriologically. If this fails, pleural biopsy or surgical exploration may be necessary to determine whether long treatment for tuberculosis is justified. The patients received the treatments that were in vogue at the time they were under observation. It is now recommended that the pleural space be kept as dry as possible; that strict bed rest be employed for at least six months, with graduated exercises for the succeeding six months; and that antimicrobial drugs be administered for at least one year after diagnosis. Treatment is directed not only to pleurisy but also to the underlying cause. Immediate recovery resulted in all patients in this series regardless of treatment. Remote prognosis depends upon conditions existing before pleurisy occurs rather than upon the effusion. Immediately after the initial invasion, tubercle bacilli are focalized not only in the lungs but in various other parts of the body. Any one or more such foci that continue to harbor tubercle bacilli may subsequently release organisms that result in clinical lesions. Pleurisy with effusion is only one of the numerous immediate and remote possibilities. It is doubtful that pleural effusion per se has any effect on subsequent developments. Of the 260 persons constituting this group, 247 (95%) were traced. Eleven had died from nontuberculous conditions. The reinfection type of tuberculosis developed in 23 of the remaining 236 patients. The ultimate prognosis cannot be estimated, because tuberculosis is a lifetime disease, and new lesions may yet appear and old ones may become reactivated. It is suggested that

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pleurisy with effusion, like other clinical forms of tuberculosis, may perhaps be prevented by administering antituberculosis drugs promptly after tuberculin conversion while lesions are small and vascular.

The Middle Lobes in Tuberculosis. E. Minetto and S. Pettinati. Minerva med. **46:**1749-1756 (June 16) 1955 (In Italian) [Turin, Italy].

Lesions of the middle lobes were found in 82 (13.4%) of the 618 tuberculous patients of a Turin sanatorium. They were located in the right middle lobe in 34, in the lingula in 45, and in both areas in 3. There was evidence that the lesions were primary in only three (0.49%) patients. They were located in the right middle lobe in one case, in the lingula in the second, and in both areas in the third. These findings confirm the rare occurrence of primary tuberculosis in the middle lobes. In the other 79 patients, the disease in the middle lobes was secondary to lesions that were located in the thoracic and apical segments of the upper lobe in 74 cases and in the apical segment of the lower lobe, the so-called Fowler's lobe, in 5. A study of the time of onset and of the clinical and radiological characteristics of these secondary lesions indicated that they had spread by the bronchogenic route. While this route of dissemination has been accepted for secondary lesions to the lingula, which is considered by many the location of choice for bronchogenic dissemination, the same is not true for secondary lesions to the right middle lobe. Yet in this series there were 44 cases of bronchogenic secondary lesions to the lingula and 33 to the right middle lobe. There were only 5 cases of dissemination from the left side to the right middle lobe as compared with 28 cases of homolateral spreading. The respective figures for the lesions to the lingula were 17 as compared with 27. The evolution of the tuberculous lesions in the middle lobes was also studied. Ulceration was found in 11 (13.5%) patients in whom the lesions were secondary: five times in the right middle lobe and six times in the lingula. It was present in the involved lobe of all the three patients in whom the lesions were primary. In many patients in whom the disease to the middle lobe is secondary, these lesions do not undergo cavitation. They are benign, can be treated with antibiotics, and either the parenchyma can be restored to health or fibrotic retraction of the lobe may result. When the bronchogenic lesions of the middle lobes do undergo cavitation, antibiotic therapy may be given. If this fails, surgery, namely exeresis, should be performed. This should also be the treatment of choice for those rare cases of primary tuberculous lesions to the middle lobes that undergo ulceration.

Mesenteric Lymphadenitis. E. R. Bonfigli. Minerva med. **46:**1688-1695 (June 9) 1955 (In Italian) [Turin, Italy].

A differentiation is made of mesenteric lymphadenitis into: (1) Ball's tabes mesenterica or caseous tuberculosis of the mesenteric lymph nodes, (2) acute nonspecific mesenteric lymphadenitis, and (3) chronic nonspecific mesenteric lymphadenitis. These three syndromes should be considered as distinct conditions that have in common only the organ they affect. The causative factor is tuberculosis in the first syndrome and nonspecific and perhaps multiple in the other two. The pathogenesis is uncertain and the route of infection may be enterogenous, hematogenous, or lymphogenous. The pathological findings are characterized by caseous necrosis in the first syndrome, acute inflammation (purulent or hyperplastic) in the second, and chronic hyperplastic, rarely calcific, nonspecific inflammation in the third. The clinical course is acute, sometimes dramatic, in acute mesenteric lymphadenitis and extremely chronic in the chronic form. Differential diagnosis is not easy, especially with regard to acute appendicitis. The prognosis is grave for the first two syndromes, but rather benign for the third. Treatment varies; it is antituberculous in Ball's tabes mesenterica, surgical in most cases of acute mesenteric lymphadenitis, and antilymphatic (vitamins and arsenic) in chronic mesenteric lymphadenitis. In the latter, seashore heliotherapy, ultraviolet rays, and, sometimes, operation are indicated.

The Diagnosis of Bronchogenic Carcinoma in Patients with Pulmonary Tuberculosis. M. E. Shafran and J. Kavee. A. M. A. Arch. Int. Med. **96:**157-167 (Aug.) 1955 [Chicago].

During a 12 month period at Montefiore Hospital, the antemortem diagnosis of coexisting bronchogenic carcinoma and pulmonary tuberculosis was made and confirmed in six patients, all of whom were men between the ages of 45 and 69. The histories of the six patients are presented and discussed. Five of the six were originally admitted to a tuberculosis ward with a diagnosis of pulmonary tuberculosis. One was admitted to the nontuberculous pulmonary service, since activity of the tuberculous process had been ruled out by studies in the outpatient department. Three of the patients had active pulmonary tuberculosis, in that tubercle bacilli were found in the sputum, and in two of these three cavitation was demonstrable by roentgenologic examination. The other three patients were considered to have inactive pulmonary tuberculosis. The diagnosis of pulmonary neoplasm was suspected at the time of admission in four of the patients. In two of these a round homogeneous density with fuzzy circumference aroused suspicion. In a third patient the characteristic wedge-shaped lesion extending upward from the right hilum with linear projections at the periphery of the lesion strongly suggested a bronchogenic carcinoma. A fourth patient had right upper lobe atelectasis with elevation of the horizontal fissure, which suggested a neoplasm of the appropriate bronchus. In the two other patients the suspicion of malignant disease was aroused when it was noted that there was extension and growth of the lesion on serial x-rays, with concomitant regression of the tuberculosis elsewhere in the lungs on a regimen of adequate antituberculous chemotherapy and bed rest. When the confirmatory diagnostic studies, such as bronchoscopy, cytological examination of sputum and bronchial washings, biopsy of bronchial mucosa, and excision of the scalene fat pads, failed to provide a definitive diagnosis, exploratory thoracotomy was resorted to. The authors feel that, in any patient who shows roentgenologic regression of tuberculous densities on rest and adequate chemotherapy and simultaneous growth or failure of another noncalcific lesion to improve, one may strongly suspect the coexistence of carcinoma of the lung and pulmonary tuberculosis. Patients with pulmonary tuberculosis present a unique opportunity for early discovery of bronchogenic carcinoma, since they undergo frequent roentgenologic examination of the chest. With the increasing frequency of lung cancers and with the shifting incidence of pulmonary tuberculosis into the older age groups, it is important that physicians treating pulmonary tuberculosis be aware of the increasing incidence of bronchogenic carcinoma in these patients.

Natural Duration of Bronchial Carcinoma. J. R. Rignall. Lancet **2:**210-214 (July 30) 1955 [London, England].

During 1951 and 1952, 637 patients with bronchial carcinoma were seen at two London hospitals. Of these, 135 were treated surgically, 210 by radiotherapy, and 292 received no treatment likely to prolong life materially. In 255 of this untreated group, sufficient information was available to study the natural duration of the disease. Half of the 255 patients died within nine months from the appearance of the first symptoms, but 14% survived two years or longer. The duration of life from the start of symptoms was found to be significantly influenced by the histological type, the duration of illness before diagnosis, and the presence of metastasis at diagnosis. It appeared to depend, though to a lesser extent, on the nature of the first symptom and the age of the patient; but it was not materially influenced by sex or by the lobe in which the tumor occured. The relation of the duration of life after diagnosis to the length of history before diagnosis is not a simple one. The poorest prognosis was found in those who had had symptoms for four or five months before diagnosis, half of whom died in the next three months. Half of those with symptoms for a year or more lived for a further seven months, and almost a third lived for another year. Published reports and clinical experience suggest that the survival of patients treated by radiotherapy is certainly not strikingly different from those untreated, and the alleged prolonga-

tion of life is not self-evident. Moreover, unless patients have been alloted at random to treated and untreated groups, those given long courses of radiotherapy will almost certainly be better risks than those not treated, who usually are severely ill or cachectic or have widespread metastases.

Use of Corticotropin Gel and Cortisone in Treatment of Severe and Intractable Asthma. B. M. Davies and D. A. Williams. Brit. M. J. **2**:293-296 (July 30) 1955 [London, England].

The authors are concerned chiefly with the results of short-term therapy, presenting the effects of treating 44 patients with chronic asthma and 6 with chronic bronchitis with 57 and 7 courses, respectively, of cortisone, corticotropin gel, and/or hydrocortisone. Eleven of the asthmatics were in status asthmaticus; the remaining 33 had intractable asthma. In the asthmatics, 87.5% of the courses gave good results. The temporary relief afforded lasted an average of 30 days but ranged from 1 day to 240 days. In about half of these patients with severe asthma, continuation of hormonal therapy proved unnecessary, but continuation seemed desirable in from 40 to 50% of the patients. This corresponds with the observations of other investigators. Continuous hormonal therapy is beset with risks and requires careful supervision, but short courses seem to be quite safe, if care is taken in the selection of patients. Contraindications to treatment with these hormones were ascertained by a careful history, special inquiry being made about peptic ulcer. Dosage schemes should not be laid down by rule of thumb but should depend on the severity of the asthma and on the patient's response. It is important to distinguish between asthma and bronchitis. The authors observed failure of response in a patient who had purulent sputum but also a marked drop in eosinophils. This patient's condition later improved in response to antibiotics and general measures. Possibly the hormones relieve asthma due to nonpurulent obstruction of the bronchi but fail to relieve the obstruction due to a frankly purulent bronchitis.

Complications of Oxytetracycline and Tetracycline Therapy Related to a Defined Type of Resistant Staphylococcus. J. Brodie, W. Jamieson and T. Sommerville. Lancet **2**:223-225 (July 30) 1955 [London, England].

Complications arising in the course of antibiotic therapy have been attributed to antibiotic-resistant strains of micrococci (staphylococci). These complications, which include gastroenterocolitis, sore throat with scarlatiniform rash, sore throat without such rash, balanitis with scarlatina, and urinary infection, have been observed chiefly following the broad spectrum antibiotics, namely, chloramphenicol, chlortetracycline (Aureomycin), oxytetracycline (Terramycin), and tetracycline. The following questions arise with regard to these complications. Are they caused by micrococcic (staphylococcic) infections? Is a special type of Micrococcus (Staphylococcus) responsible? If so, does hospital cross-infection play a part? What connection is there between the complications and the antibiotics? The authors inquired into these questions at the time of a therapeutic trial of antibiotics in bacillary dysentery. They found that, during treatment of bacillary dysentery with oxytetracycline and tetracycline, some of the patients showed complications, especially scarlet fever, sore throat without rash, and gastroenteritis. These complications seemingly were caused by cross infection with a hospital Micrococcus (Staphylococcus) of defined type. The term ac/-POCST, applied to this type, implies that it is agglutinated by absorbed serums "a" and "c" (only) in the live state, is not agglutinated by absorbed serums in the autoclaved state, and is resistant to penicillin, oxytetracycline, chlortetracycline, streptomycin, and tetracycline. The close association of the type of Micrococcus (Staphylococcus) (ac/-POCST) with the patients showing complications during treatment is strong presumptive evidence that it was the organism responsible for them. Two difficulties call for explanation: (1) the failure to isolate it from some of the patients showing complications, and (2) its presence in many patients in the dysentery wards who did not show complications. The first difficulty may be an expression of the selection that inevitably operates when single colonies are picked from the culture plate at primary isolation. The second difficulty is more theoretical than actual, for in communicable disease the carrier rate is often higher than the incidence of illness. The presence of the organism in three nurses, all of whom had worked in the dysentery wards but had not received antibiotics, is evidence that at some stage cross infection had taken place. The control of staphylococcic cross infection may depend not on the search for staphylococcic carriers in general but on the recognition of carriers of defined types of proved pathogenicity, of which ac/-POCST seems to be one.

Leukemia in Survivors of Atomic Bombing. W. C. Moloney. New England J. Med. **253**:88-90 (July 21) 1955 [Boston].

Of 92 verified cases of leukemia occurring up to Jan. 1, 1954, in survivors of the atomic bombing in Hiroshima and Nagasaki, 75 were reported on previously, while observations on 17 subsequently observed new cases of irradiation-induced leukemia prompted the author's present report on the various aspects of this disease. Of the 17 patients whose cases were studied in 1953, the disease started in 1 in 1951, in 8 in 1952, and in 8 in 1953. It seems safe to conclude that, although the peak occurrence of leukemia was probably reached in 1951, it will continue to appear but its rate of occurrence in survivors of the atomic bombing is definitely declining. Of the 92 survivors with confirmed irradiation-induced leukemia, 52 had acute or subacute leukemia, and, of the 40 with chronic disease, 39 had the myelogenous type, and only one the chronic lymphatic variety. Data indicated that in man the leukemogenic dose of a single exposure to atomic radiation is high. Biological evidence in survivors indicated that in contrast to previous statements, according to which the dose of gamma irradiation was 25 r at 2,000 m. from the hypocenter and the neutron flux only extended to 800 m., symptoms and signs of severe irradiation sickness were present in survivors out to 2,500 m. from the hypocenter, and lens opacities caused by irradiation were noted at 1,700 m. Since irradiation cataracts were undoubtedly caused by neutrons, the neutron flux probably extended much farther and was more intensive than estimated physically. The implications are that neutrons as well as gamma irradiation were probably involved in the leukemogenesis. Cytological features in the preclinical stage of chronic granulocytic leukemia included the early appearance of a small percentage of myelocytes and metamyelocytes and a very significant basophilocytosis. Separated leukocytes showed extremely low alkaline phosphatase activity, even in the earliest stages of the disease.

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The Physiologic and Pathologic Evaluation of the Implantation of the Internal Mammary Artery Into the Left Ventricular Myocardium for the Treatment of Coronary Artery Disease. A. A. Bakst, R. Maniglia, A. Adam and C. P. Bailey. Surgery **38**:349-362 (Aug.) 1955 [St. Louis].

The Vineberg operation, in which the internal mammary artery is implanted within the thickness of the left ventricular myocardium, has been said to result in the development of a collateral circulation between the implanted artery and the left anterior descending coronary artery. Quantitation of the retrograde blood flow from the peripheral segment of a ligated and transected coronary artery, which has proved to be an effective method of evaluating changes or augmentation produced in the intercoronary anastomoses, has been used in studying the effect of this operation in dogs. The animals used in these experiments were permitted to lead a normal kennel existence for six months after the operation and before the physiological studies were made; in general, the mortality from the initial procedure was negligible, the operative technique was simple, and the incidence of thrombosis of the internal mammary implant was low (8.9%). The physiological studies showed that the retrograde blood flow from the distal cut end of the ligated left anterior descending coronary artery averaged 2.3 cc. per minute, representing a normal amount of the intercoronary arterial anastomotic flow. Separate clamping, first of the internal mammary implant and later of the left circumflex artery at its origin, proved that this

intercoronary anastomotic flow arose almost entirely from the nonoccluded circumflex artery; no increase or change in the flow could be attributed to the implanted internal mammary artery. These physiological results can be explained by the fact that on pathological examination the lumina of the implanted vessels were 95% obliterated by severe intimal proliferation. The vessels were surrounded by fibrous tissue and presented a picture that suggested that they had been walled off by the ventricular myocardium as though they were foreign bodies. The possibility that these findings may be altered by rendering the myocardium ischemic and so creating a need for revascularization is to be investigated in a new series of experiments.

Arterial Hypertension: Comparative Study of Patients Treated by Two Surgical Procedures. G.-E. Cartier. Union méd. Canada **84:**887-910 (Aug.) 1955 (In French) [Montreal, Canada].

Fifty patients with arterial hypertension were treated surgically: 18 by dorsolumbar sympathectomy and splanchnicectomy (Smithwick's operation) and 32 by this method plus subtotal adrenalectomy. The amount of adrenal tissue resected varied from 50 to 90%, increasing as the series progressed. The effect of both operations on the following subjective signs: headache, fatigue, and work capacity were equal; they were very good in 91% of the first two symptoms and in 77% of the last. Lesions of the fundus of the eye were equally benefited in both groups of patients, despite the fact that they were more numerous and twice as severe in the patients in whom adrenalectomy was practiced. Electrocardiographic signs were ameliorated in both groups. There was not always a correlation between improvement or the lack of it in one or several of these signs and the effects of surgical intervention on the arterial pressure. Women responded better to the operations than men, but the sex difference was less pronounced among the patients who had the combined procedure. Excellent results were obtained in between 50 and 58% of all the patients and good or excellent results in from 62 to 70%. Greater drops in pressure were obtained in the patients with adrenalectomy. The levels of systolic and diastolic pressure before intervention did not determine the results. The amount of time that has elapsed since operation did not affect the results in patients given combined treatment, whereas it was an influencing factor in patients with sympathectomy alone. The author is convinced that the addition of adrenalectomy accounted for the better results achieved in that group of patients and not some other factor. There also seems to be a parallel between the pressure drop and the amount of functioning adrenal tissue left in the patient. The results of the Thorn test suggested that there was no compensatory adrenal hyperfunction after removal of part of the adrenal glands. The proper use of surgical interventions of the type described is in the treatment of patients with arterial hypertension whose disease has not been arrested by adequate medical therapy pursued for a reasonable period of time.

Recovery with Cardiac Massage After Cardiac Arrest Lasting Thirty-Seven Minutes. L. Eckmann and M. Allgöwer. Arch. klin. Chir. **280:**451-454 (No. 5) 1955 (In German) [Berlin, Germany].

The patient, a woman aged 38, was to be subjected to a brain operation. Anesthesia was induced by means of pentobarbital and a muscle relaxant. During endotracheal intubation, which followed spraying of the pharynx with a surface anesthetic, the patient became pulseless, the pupillary reflexes were not elicitable, blood pressure could not be measured, and the carotid pulse could not be felt. Thoracotomy was done at once through the fourth intercostal space, and, within three minutes after the cardiac arrest, cardiac massage was begun. Pure oxygen was given through the endotracheal tube. Intracardiac injection of first 0.25, then 0.50, and finally 1 mg. of epinephrine had no effect. Cardiac massage was continued for 37 minutes, and then spontaneous contractions set in. At first there were a few systoles, in which apparently only the ventricles participated, but then the heart action was transformed into a normal, sinus-regulated type, which was rhythmical. During cardiac massage spontaneous breathing returned before spontaneous heart action had been restored. No hypoxemic symptoms recurred during the further course, and an electrocardiogram made 20 hours later showed a sinus rhythm frequency of about 100 per minute but otherwise essentially normal conditions. Four weeks later electrocardiography revealed a moderate sinus rhythm and signs of the action of digitalis. The former status was restored after cardiac massage, and there were no disturbances in respiration, digestion, renal function, or speech.

Chlorpromazine as an Aid to Cooling in a Thyroid Crisis. A. R. Hunter. Lancet **2:**173-174 (July 23) 1955 [London, England].

Subtotal thyroidectomy in a hyperthyroid patient was followed by acute hyperthyroidism. The temperature rose steadily to 105 F (40.6 C), and the pulse rate to 200. Thereafter the pulse became uncountable, and auricular fibrillation developed. Despite treatment with digoxin and intravenous iodine and with sedation with phenobarbital, the patient's condition deteriorated steadily. When, 24 hours after operation, it had become apparent that a thyroid crisis was developing, the patient was given a test dose of chlorpromazine, 25 mg. orally, followed by 50 mg. four hours later. A further 50 mg. was given every 8 hours during the subsequent 72 hours. The blankets were at once removed from the bed. When, 30 hours after operation, her condition had deteriorated despite gentle cooling, 100 mg. of meperidine (pethidine) was injected intravenously over 10 minutes. Ice bags were placed in axillae and groins, and on the abdomen, and the patient was placed in an oxygen tent. The nursing staff was instructed to take the oral temperature half-hourly and to remove the ice if this fell below 98 F (36.7 C). Two hours after the initial application of ice the patient became restless, presumably because of discomfort; an additional 50 mg. of meperidine was given intramuscularly, and this dose was repeated every 4 hours for the next 48 hours. Her temperature fell steadily after the application of ice, and next morning her pulse rate was 136, respiratory rate 20, and the temperature 98 F (36.7 C). The ice bags were removed. Five hours later, when the temperature had again reached 101 F (38.3 C) and the pulse rate 160, they were reapplied for a further two hours, after which her temperature again fell to 98.6 F (37 C). Subsequently her condition improved steadily; but administration of meperidine and chlorpromazine was continued so that cooling could be begun without difficulty should the need arise. The patient recovered. The essential problem in thyroid crisis is to reduce the excessive metabolic rate. In the past there has been no completely effective method of doing this, and the condition has carried a very considerable mortality. In the present case the combination of cooling with prevention of shivering by administration of chlorpromazine and meperidine seemed to be responsible for the patient's recovery.

Traumatic Rupture of the Esophagus (With a Report of 13 Cases). J. W. Overstreet and A. Ochsner. J. Thoracic Surg. **30:**164-180 (Aug.) 1955 [St. Louis].

Traumatic rupture of the esophagus is a catastrophic accident that is increasing in frequency and one that is associated with prohibitive mortality and morbidity unless early diagnosis, vigorous resuscitation, and definitive surgical therapy are carried out. Of 13 patients with traumatic perforation of the esophagus treated by the authors from July, 1950, to June, 1953, eight cases were due to diagnostic or therapeutic endoscopy or bougienage, one occurred in the pyriform fossa during attempted passage of a Levin tube with the patient under endotracheal anesthesia, and four were due to penetrating injuries of the neck. The patients were subjected to operation as soon as possible after the diagnosis was made and resuscitative and supportive therapy had been started. Ten of the patients received primary repair with excellent results except for small temporary fistulas that developed in three. The duration of perforation prior to repair in those developing fistulas was 44 hours, 24 hours, and 28 hours, respectively. Mediastinotomy and drainage were done in two patients, the first of whom underwent posterior mediastinotomy and intrathoracic underwater-seal drainage for massive infected pleural effusion and tension pneumothorax 28

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hours after perforation; she died on the eighth postoperative day. The second patient underwent cervical drainage of a high mediastinal abscess 32 hours after perforation during biopsy of a high thoracic esophageal carcinoma. The ages of the patients ranged from 16 to 88 years. The time interval from perforation to surgery varied as extensively as did the ages, the intervals ranging from 1½ hours to 44 hours. Of the eight endoscopic perforations, five occurred immediately below the cricopharyngeus sphincter on the posterior esophageal wall, one occurred through a stricture immediately above the esophageal hiatus, and in the two patients in whom drainage only was done the site was in the cervical or upper thoracic esophagus, but the opening was not visualized. All four of the penetrating esophageal injuries occurred in the cervical segment. The authors conclude that their experience is about the same as that of others, in that prompt diagnosis, rapid resuscitation, surgical exploration with débridement of contaminated fascial planes, definitive repair of the esophageal defect, and vigorous postoperative supportive therapy are followed in a large percentage of cases by a rapid and relatively uncomplicated recovery from this previously highly fatal accident.

The Relation Between Sideropenia and Anemia and the Occurrence of Postcibal Symptoms Following Partial Gastrectomy for Peptic Ulcer. S. Wallensten. Surgery **38:**289-297 (Aug.) 1955 [St. Louis].

The symptoms of fatigue, pallor, nausea, palpitation of the heart, epigastric pain, and occasionally diarrhea as well, occurring a short time after meals in patients subjected to partial gastrectomy, sometimes referred to as the dumping syndrome, have also been variously designated as postprandial and postcoenal. The term postcibal (i. e., post cibum, after meals, after eating), applied to these symptoms by Meurling, among others, seems on the whole to be comprehensive enough to cover the rest. The incidence of these symptoms, which are sometimes so severe that they endanger the good results of gastrectomy for peptic ulcer, is comparatively high. Some authorities believe that they originate in the small intestine, as a result of such disturbances as jejunal distention, irritation of the small intestine and increased motility therein, hyperemia in the vicinity of the splanchnic nerves, allergy, and the like; others attribute them to conditions such as distention, gastritis, achylia, and the like in the gastric remnant; and still others think they originate elsewhere. Hypoglycemia, reduced serum potassium, and even anemia or sideropenia are among the causes suggested by those in the last group. Critical evaluation of these possibilities leads to the conclusion that, while a number of factors may contribute to the occurrence of postcibal symptoms, they are in all probability usually caused by the response of the small intestine to a sufficiently intense, nonspecific irritation. Epithelial changes in the nails and buccal mucosa have been shown to accompany sideropenia and, if similar changes exist in the intestinal mucosa, the resulting mucosal sensitivity might conceivably play a significant part in the response of the intestine to irritation. Postcibal symptoms have, in fact, been found to occur more frequently in patients with sideropenia than in those with normal hemoglobin and serum iron values. Investigation of 587 patients who underwent partial gastrectomy for peptic ulcer during the period between 1932 and the end of 1949 confirmed the author's previous findings and showed an appreciably higher incidence of postcibal symptoms in patients with definite anemia and sideropenia than in those with normal or slightly reduced hemoglobin content. An increase in the degree of iron deficiency was paralleled by a rising incidence of postcibal symptoms. Iron therapy, administered intravenously because of the poor capacity for absorption often found in patients who have undergone gastrectomy, was given to 21 patients with sideropenia and postcibal symptoms. All but one were considerably improved, and in 14 the symptoms disappeared completely. Improvement was also obtained in two of six patients with postcibal symptoms who had normal serum iron values, but the other four were unimproved. No serious side-effects were noted. Some patients reported a general sense of bodily warmth as well as heat and flushing of the face, but these effects could be avoided by giving the injection more slowly. These findings show that there is every reason to use well planned and executed iron therapy in an attempt to improve the condition of patients with postcibal symptoms accompanied by anemia or sideropenia.

Indications and Results of Surgical Treatment of Recurrences of Malignant Tumors. M. Schwaiger and K. H. Müller. Arch. klin. Chir. **280:**536-551 (No. 5) 1955 (In German) [Berlin, Germany].

The authors found follow-up possible in 125 of 153 patients who were operated on for recurrence of malignant tumors at the Heidelberg University Hospital during the decade from 1943 to 1953. One operation for relapse was performed in about half of these patients, and the others underwent from two to five operations for relapse, a total of 216 operations. The fact that a total of 37,000 operations were performed at the same hospital during the period in question indicates that operations for relapses of malignant tumors were comparatively rare. The patients included 35 with mammary carcinoma, in whom 53 operations were carried out for recurrences. The number of operations performed for recurrent lesions in other sites were as follows: 17 in 17 patients with gastric carcinoma recurrences; 23 in 17 patients with colon-rectal carcinoma; 33 in 13 patients with facial carcinoma; 13 in 7 patients with other squamous cell carcinomas; and 12 in 6 patients with miscellaneous tumors. The most favorable results were obtained in relapses of mammary carcinoma and in carcinoma of the lips and cheeks. Although 50% of these patients died within two years after the operation for relapse, 25% experienced remissions of several years' duration and another 25% obtained permanent cures. The fact that among the definitely cured there were some with extensive recurrences that required resections of the thoracic wall indicates that operation may prove effective even in rather advanced processes. In carcinoma in the region of the lip and cheek operation for relapse was followed in one-third of the patients each by cure, remission, or death. In relapses of sarcoma the results were favorable only in the rather mature forms (three fatalities compared with seven cures). In the undifferentiated forms of sarcoma the surgical treatment could not arrest the unfavorable course. In carcinoma of the gastrointestinal tract attempts at radical removal in relapses were ineffective. Search for the factors common to the relapses that responded favorably to operation revealed that they were relapses involving the skin, the superficial soft parts or the scar tissue. Judging by form, localization, and growth, these recurrences were caused by incomplete removal or by surgical implantation of tumor tissue. The authors feel that, in the favorable forms, surgical removal should always be tried. The fact that of those who were cured about 50% had not one but several relapses indicates that in case of repeated recurrences surgical removal should be attempted each time. With regard to the surgical technique, the authors regard it as important that, in order to avoid a new tumor implantation, it should be carried out under general anesthesia; that, if possible, excision should be done with the electric knife; and that removal should extend far into the healthy tissue. Factors likely to cause mechanical, chemical, or physical damage should be kept away from the region of the operation, in order to avoid further relapses.

Spondylolisthesis: A Critical Review of a Consecutive Series of Cases Treated by Arthrodesis. D. M. Bosworth, J. W. Fielding, L. Demarest and M. Bonaquist. J. Bone & Joint Surg. **37A:**767-786 (July) 1955 [Boston].

The statistical material presented in this paper is concerned with 115 patients who were treated by spine fusion for spondylolisthesis in the lumbar spine. The report of the surgical results is concerned with 75 patients operated on by a single technique. The forward slip of the vertebral body and the defect in the pars interarticularis in spondylolisthesis represent only a part of the anatomic alteration present in such cases. The arch of the displaced segment tends to provide support for the spine and to prevent further slippage. Removal of the arch is advisable but only if it is replaced by a bone graft to give adequate support. Pain in spondylolisthesis is the result of more than one causal factor. The authors believe it to be due to impingement

of malaligned bony elements and to abnormal stress on fibrous or ligamentous structures. Extradural pressure from prolapse of an intervertebral disk occurs occasionally. Pressure from hypertrophied fibrocartilaginous tissue in the pars interarticularis defect was not noted by the authors. Disk degeneration itself cannot cause pain. Earlier the authors had used various surgical techniques, including the Hibbs-type fusion with and without reinforcing iliac strips and tibial H-grafts with and without additional iliac strips. Since 1944 the routine procedure has been to implant an autogenous, cortical iliac graft of the distraction type, supplemented by strips of cancellous iliac bone placed beneath it. Since 1941 the authors, as a rule, removed the fifth lumbar laminar arch. Since 1942 the bone grafts have been placed in contact with the previously denuded stumps of the pedicles of the displaced segment. The arch was removed in 64 instances and left in situ in 11. Of the 75 fusions 66 were from the fourth lumbar vertebra to the sacrum, 6 were from the third lumbar vertebra to the sacrum, 2 from the third to the fifth lumbar vertebra, and one was from the second to the fourth lumbar vertebra. There were no operative deaths. Sixty-five of 73 patients who could be evaluated were asymptomatic. Of the 66 with solid fusion, 62 were free from symptoms; of the 7 with failure of fusion only 3 were asymptomatic.

Clinical Evaluation of 750 Patients with Colon Cancer: Diagnostic Survey and Follow-Up Covering a Fifteen-Year Period. T. A. Shallow, F. B. Wagner Jr. and R. E. Colcher. Ann. Surg. **142:**164-175 (Aug.) 1955 [Philadelphia].

The peak incidence (60.7%) of cancer of the colon in a series of 750 patients occurred in the sixth and seventh decades, with slight predominance in the male (56%). The age extremes were 16 to 92 years. Change in bowel habit is probably one of the earliest symptoms of colonic cancer, 69.3% in this series. Weight loss and anemia were commoner in right colon lesions and obstructive phenomena commoner in the left colon. About 50% of all the cancers of the colon, rectum, and anus were palpable on digital rectal examination. Seventy-seven per cent of the lesions occurred in the lower sigmoid, rectosigmoid, and rectum; three-fourths of these were palpable rectally. Polyps of the colon were demonstrated by barium enema or sigmoidoscopic examination in 16.2% of the patients and another primary colonic cancer in 4%. This emphasizes the probable role of polyps as precursors of colonic cancer. The most significant cause for delay in diagnosis was the assumption by the patient or physician that rectal bleeding was due to hemorrhoids. Change in bowel habit frequently caused no immediate concern. Cardiovascular disease was the commonest surgical handicap encountered; urinary tract invasion or compression justified routine preoperative intravenous urography and sometimes bilateral ureteral catheterization. Many of the patients (28.3%) had late lesions. Thus, 14.8% required decompressive surgery for complete colonic obstruction, an additional 11.6% had palliative surgery, and 1.9% were prohibitive surgical risks. With adequate bowel preparation and the use of the Miller Abbott tube, it is usually safe to perform wide resection with open primary anastomosis of left colon lesions. When optimal conditions are lacking, such as in marked edema, disparity in size of the lumens, or questionable blood supply to either loop, it is safer to perform stage resection with later restoration of continuity. For cancer of the lower sigmoid, rectosigmoid, rectum, and anus, the authors perform abdominoperineal resection with perineal excision including the levator ani muscles. Resection with primary anastomosis is done only when an adequate segment of colon distal to the lesion can be removed and anastomosis carried out above the peritoneal reflection. In anal cancer, abdominoperineal resection was supplemented by bilateral radical femoroiliac lymph node dissection. The resectability rate in this series rose from 82.5% in the first of the three five year periods covered by the study to 89.3% during the last five years. This is among the highest rates reported in the literature. Urinary tract infection accounted for the highest morbidity and renal failure for the highest mortality. Complete five year follow-up study was obtained in 93.6% of the eligible patients. The over-all five year survival was 33.1%, and 94% of these patients were still clinically free of cancer. There was a significant drop in recurrence rate and metastases after the third year. The rectosigmoidal and rectal group of cancer patients showed a higher survival rate than those with right or left colon lesions. Among those patients who had localized lesions without evidence of spread, the five year survival rate in the rectosigmoidal and rectal group was 70.3%. The survival rate was higher in the patients with lesions histologically graded as low or intermediate.

NEUROLOGY & PSYCHIATRY

Presenile Cerebellar Ataxia in Chronic Alcoholics. S. A. Skillicorn. Neurology **5:**527-534 (Aug.) 1955 [Minneapolis].

Six patients with a clinical picture of cerebellar atrophy, characterized by slowly progressive ataxia beginning in middle age, were admitted within a period of six months to the U. S. Naval Hospital, San Diego, Calif. They are presented with a twofold purpose: (1) to emphasize that this particular syndrome should be considered in any case of progressive cerebellar dysfunction with onset in the presenium, especially if there is a history of alcoholism, and (2) to offer the concept that the cerebellar syndrome may be but part of a diffuse degenerative process of the entire brain. The age at onset varied from 39 to 55 years. Duration of the illness was one year for three men, 2 years for one, 5 years for one, and 15 years for the other. All patients admitted to prolonged overindulgence in alcoholic beverages. Initially, three of the patients showed a mild to moderate peripheral neuropathy that disappeared following vitamin therapy and adequate diet. While a satisfactory explanation has never been given for the predominance of cerebellar dysfunction in the lower extremities in this syndrome, it is suggested that the evolutional transition from four-legged to upright two-legged animal ambulation possibly has resulted in redistribution of cerebellar function, that is, adaptation, with functional activity directed toward maintenance of synergy more in the lower than in the upper extremities, and with consequent prevalence of leg incoordination in cases of diffuse degeneration of the cerebellum. The absence of nystagmus in the reported patients probably indicates that the vestibular nuclei and their connections are not involved by the degenerative process, at least not of sufficient extent to produce clinical manifestations. Pneumoencephalographic and psychological studies suggested the presence of diffuse degenerative disease of the cerebrum, in addition to cerebellar atrophy.

Treatment of Some Neuropsychic Syndromes of Old Age with Chlorpromazine. G. Mars and M. Morpurgo. Gior. gerontol. **3:**226-232 (May) 1955 (In Italian) [Florence, Italy].

Chlorpromazine (Largactil) was used in the treatment of 53 patients in the 72 to 86 age group, 4 of whom had involution melancholia, 30 senile psychoses of demential, delirious, and manic-depressive type, 2 epileptic syndrome, 12 Parkinson's syndrome, and 5 subacute alcoholism. The drug was given at first intramuscularly, then orally, in doses of from 50 to 200 mg. daily according to the severity of the condition. The therapy was continued for from 1 to more than 90 days; it was tolerated well and never caused marked side-effects. The most noteworthy effect was the drug's influence on the humor of the patients who, sad and depressed before the therapy, became euphoric and optimistic. The therapy had also a sedative and hypnotic effect. Results were good in 38 patients, in 16 of whom they were definitive. The best results, as to the sedative, hypnotic, or euphoric effect, were seen in the patients with psychosis of delirious type, involution melancholia, subacute alcoholism, and epileptic syndrome. The results were poor and transitory in those with dementia and manic-depressive psychosis, and the condition of the patients with Parkinson's syndrome was not influenced. The serum protein findings were unchanged during and after the therapy, suggesting that the hepatic function was not altered. Some patients gained appetite and body weight. Careful clinical and laboratory studies of the cardiovascular system, liver, and hemopoietic organs and their functions in these patients indicated that old age is not a contraindication to the use of chlorpromazine.

Relapses in Adults with Tuberculous Meningitis: Incidence and Prognosis in Relation to Form of Therapy. H. Sudhof and A. Steinhoff. Deutsche med. Wchnschr. **80:**1085-1086 (July 22) 1955 (In German) [Stuttgart, Germany].

According to the principles established by the World Health Organization, only those patients with tuberculous meningitis can be regarded as cured in whom at least 12 months have elapsed since the onset of the antituberculous therapy. It was observed soon after the introduction of streptomycin that relapses were frequent before, but not after, this period. The 100 adult patients with tuberculous meningitis discussed in this report had all been observed for more than a year. Relapse was mentioned in 21 of them. Eleven of these, however, could not be regarded as true relapses, because in these patients the relapse occurred during the period of treatment, before all meningitic symptoms had subsided. The authors present an illustrative case history, which demonstrates that the patient in question did not have true relapse but that the course of the tuberculous meningitis was characterized by successive bouts or exacerbations. The patients who had this form of tuberculous meningitis had a poor prognosis, in that 8 of the 11 died. Autopsies made in five of the eight fatal cases revealed a rather uniform pathological picture. In addition to old healed tubercles, the meninges also showed new lesions, and in two of the cases lesions typical of all the stages of tuberculous meningitis were present. This suggests that from the beginning the treatment had been insufficient to control the disease process. Cases of that type are no longer observed since isoniazid therapy has been introduced. Ten of the 21 were true cases of relapse. In 6 of these 10 the tuberculous meningitis had been treated with streptomycin only, in one with streptomycin and aminosalicylic acid, and in 3 with streptomycin, aminosalicylic acid, and isoniazid. In 3 of the 10 patients the relapse occurred because the tuberculous meningitis had not been treated adequately. Treatment was continued for only six weeks—in two, because of rapid improvement, and in one, because a psychosis had developed. Observations on these three patients emphasize the need of continuing treatment with the three drugs over long periods. Since the authors have done this, they have not observed a single true relapse. Serial examinations of the cerebrospinal fluid did not provide an early indication of the occurrence of relapses.

Treatment of Tuberculous Meningitis with Tuberculostatic Drugs in Combination with Cortisone. F. Michel and W. Pulver. Schweiz. med. Wchnschr. **85:**717-721 (July 23) 1955 (In German) [Basel, Switzerland].

It has been observed that, in from 10 to 15% of patients with tuberculous meningitis, an arachnoiditis develops, which interferes with the circulation of the cerebrospinal fluid. Since the administration of cortisone has been known to prevent or counteract this arachnoiditis, the authors used cortisone in addition to tuberculostatic drugs in four children and in four adults with tuberculous meningitis. The antituberculous drugs used were streptomycin, isoniazid, and, in some of the patients, aminosalicylic acid. The streptomycin was given only intramuscularly. The isoniazid was given orally, in doses of 5 to 10 mg. per kilogram of body weight, and by intralumbar injection, 20 to 30 mg. per injection, to the first five patients, whereas the other three patients received this drug by oral administration only. Cortisone was given at first in doses of 100 or 200 mg. per day; later this dose was gradually reduced by 25 to 50 mg. and then was discontinued after from three to five weeks. The drug therapy was continued for from four to seven months, and the intralumbar administration for from two to five months. In five of the patients from 10 to 15 months have elapsed since the start of treatment, in two patients 7 months, and the eighth patient has been under treatment for 3½ months. Since the middle of May, 1955, all patients have been free from symptoms. All neurological symptoms subsided completely. The addition of cortisone to the tuberculostatic drugs did not result in the activation of healed tuberculous foci; on the contrary, active pulmonary and hilus lesions showed improvement or clinical cure. Mild adrenal cortical hyperfunction (Cushing's syndrome) appeared in three of the children but disappeared when treatment with cortisone was discontinued. The main effect of the cortisone seems to be that it prevents neurological damage and spinal block with its sequels.

Experiences in the Psychiatric Treatment of Ulcerative Colitis. R. G. Head. J. Louisiana M. Soc. **107:**321-324 (Aug.) 1955 [New Orleans].

The importance of psychological factors in the genesis and course of ulcerative colitis has been recognized by many observers. The author became interested in the psychiatric management of patients with ulcerative colitis when he was consulted about several who had, in addition to their ulcerative colitis, clear-cut suicidal depressive symptoms. The author treated several of them with a course of electric shock therapy, as one would treat any patient with such a severe depression, and he has now managed six cases jointly with an internist and a surgeon. The first patient was a 45-year-old woman who had had from 10 to 20 bloody stools daily for several months, with resulting weight loss and malnutrition. In addition, she was intensely depressed, was anorectic, and slept little. She received a course of eight electric shock treatments with cessation of the diarrhea after the second treatment, followed by constipation. The depression lifted gradually, and the end-result was a severely hypochondriacal person without depression or ulcerative colitis. The response of four of the others was similar and with a better final result. In each of these the diarrhea and depression stopped quickly. The sixth patient received only one electric shock treatment, additional ones being refused. Later a colectomy was performed in this patient. The five patients reacted with much more than the usual memory loss; most had a total amnesia from the hospitalization. After the first treatment, they reacted with extreme suspicion and distrust and directed various paranoid accusations against the doctor. All of these symptoms subsided over a period of weeks. It seemed as if a temporary paranoid psychosis had taken the place of the symptoms of ulcerative colitis. Five of these six patients have been followed for 18 months to two years, and none have relapsed. Perhaps, in acute cases, electric shock therapy may shorten the course of the illness and may even be of lifesaving value.

GYNECOLOGY & OBSTETRICS

Acquired Fibrinopenia in Pregnancy. A. P. Barry, F. Geoghegan and S. M. Shea. Brit. M. J. **2:**287-290 (July 30) 1955 [London, England].

It is generally agreed that an acquired fibrinopenia is responsible for the coagulation defect found in certain obstetric emergencies. This defect is most commonly seen in accidental hemorrhage, but it occurs also in association with amniotic fluid embolism, where it may lead to fatal postpartum hemorrhage. The authors as well as others encountered it after the delivery of a macerated stillborn fetus retained in utero for a considerable time in a rhesus-immunized mother, and very recently they observed it after a missed abortion (eight weeks). The authors speculate on the possibility that fibrinopenia may be responsible for the apparently disproportionately severe hemorrhage sometimes encountered in evacuating the uterus in cases of missed abortion. In any intractable hemorrhage complicating pregnancy, repeated determination of the coagulation time by the Lee and White method should be performed. The authors have been interested in the rapid fibrinogen assay method devised by Schneider in 1952, and they particularly draw attention to a simple colorimetric method for the estimation of plasma fibrinogen described by Shea in 1954. These two methods will detect degrees of fibrinogen deficiency not recognizable by the Lee and White technique. Both are well within the compass of the small clinical laboratory. The authors describe these two methods and present the histories of six patients who were selected in order to demonstrate the various circumstances in which intractable hemorrhage due to a defect of coagulation may be encountered in obstetrics. Patients who show a Schneider titer of 1 in 100 or less (plasma fibrinogen probably below 120 mg.) should be regarded as potential victims of a hemorrhagic diathesis. If hemorrhage occurs it cannot be checked without restoring the blood fibrinogen. Even if there

is no manifest hemorrhage, disastrous bleeding may be provoked by active intervention. Since stored blood for transfusion will have a fibrinogen content of 200 mg. per 100 ml. or less, it may not be possible to raise the blood fibrinogen to a safe level by transfusion of whole blood. If pure fibrinogen is not available, a rapid restoration of clotting power may be achieved by the intravenous injection of triple-strength or quadruple-strength plasma (1 pt. [570 ml.] of quadruple-strength plasma yields about 4.4 gm. of fibrinogen).

The Use of Plastic Prosthesis in Breast Plastic and Other Soft Tissue Surgery. W. J. Pangman II and R. M. Wallace. West. J. Surg. **63**:503-512 (Aug.) 1955 [Portland, Ore.].

This report is concerned with the use of Ivalon, an inert plastic sponge material, a polymer formed by the action of formaldehyde on polyvinyl alcohol. The authors mention Oppenheimer's report on the carcinogenic action of other plastics in rats, but, in reviewing the experimental and clinical use of Ivalon by other investigators, they point out that Ivalon sponge has been in situ in some animals for up to five years, and yet no malignancies have developed. The authors use Ivalon sponge in hernia repair, in building up tissues about the face, such as receding chins and nasal deformities, and in the restoration of the contour of the female breast following mastectomy and in the build-up of small breasts. When Ivalon sponge was first used for breast repair, some patients showed excessive drainage, and over 10% of the implants had to be removed because of this; also there was considerable shrinkage of the sponge. The authors overcame most of the shortcomings of the plain sponge by devising a compound prosthesis, in which the inner portion of the sponge is cut away leaving a shell of Ivalon about 5 to 8 mm. thick. The segment of the sponge removed is sealed airtight in a polyethylene sac and reinserted into the shell, like the inner tube in a tire. This prosthesis has the following advantages: (1) the outer shell affords an inert framework that becomes fixed to the surrounding tissue; (2) the inner polyethylene sac prevents further ingrowth of fibrous tissue and prevents collapse of the prosthesis; and (3) the inner sac reduces the accumulation of fluid throughout the sponge, reducing its weight and the danger of drainage. This new type of prosthesis has been used over the last three years in over 400 breast operations with favorable results. A new method of sterilization for the Ivalon prosthesis uses a vacuum, followed by formaldehyde gas for several hours, then vacuum again. This method has largely done away with infections. The authors warn against the promiscuous use of prosthesis to build up small breasts and advise that it never be used in patients with a family history of breast cancer. They also urge that the work be done only by those well qualified in the surgery, anatomy, and pathology of the breast.

Treatment of Dysmenorrhea with a New Analgesic-Sedative. W. G. Caldwell. Rocky Mountain M. J. **52**:701-703 (Aug.) 1955 [Denver].

This report is concerned with the medical management of dysmenorrhea with Fiorinal, a new analgesic and sedative, which contains Sandoptal (isobutylallylbarbituric acid), caffeine, acetylsalicylic acid, and acetophenetidin. The author used this drug in 47 women, whose ages ranged from 18 to 42 years. Except for nine patients who had retroversion of the uterus, no gross pelvic lesions existed in these women. The menstrual cycles were regular. Most of the patients complained of passing clots the first day of flow but not to a degree that could be considered excessive. Forty of the 47 women complained of gradually increasing discomfort commencing two days before and reaching a climax the first day of menstrual flow. The remaining seven complained of gradually increasing discomfort starting five to six days prior to onset and then reaching a peak on the first day of flow. All complained of lower abdominal distention from the sixth premenstrual day until the onset. Restriction of salt intake helped all 47 patients but did not completely relieve pain and discomfort. Thirty-five of the 47 patients had received previous therapy, none with any success. An initial dose of two tablets of Fiorinal, taken at the first sign of cramps, and followed routinely in three hours by one tablet, proved effective in 22 patients. Twenty-five patients required an increased or additional dosage of Fiorinal. Thirty-five of 47 showed excellent response, 18 improving to the point where they no longer required regular monthly medication. No side-effects were noted in any of the 47 cases.

Metastases of Carcinoma of Body of Uterus to Pelvic Lymph Nodes. H. Lefèvre. Ugesk. læger **117**:712-718 (June 2) 1955 (In Danish) [Copenhagen, Denmark].

Clinical investigations based on dissection of the pelvic lymph nodes during operation for carcinoma of the body of the uterus show that metastases to the pelvic lymph nodes occur to a greater extent and at an earlier stage than was formerly believed. They were found in 5 out of 40 patients operated on for carcinoma of the body of the uterus. These results together with results reported from five other sources reveal that out of 212 patients with carcinoma of the body of the uterus in whom dissection of the pelvic nodes was performed, 40, or 19%, had metastases to the pelvic lymph nodes. The tendency of carcinoma of the body of the uterus to metastasize to the pelvis should lead to radicalization of the operative treatment only in suitable cases, in which an extended or modified Wertheim operation would reasonably be undertaken. For patients who cannot tolerate so extensive an intervention, bilateral removal of the lymph nodes in foramina obturatoria and along the large vessels may be recommended.

Triethylene Melamine in the Management of Far Advanced Ovarian Cancer. M. P. Sykes, R. W. Rundles, V. K. Pierce and D. A. Karnofsky. Surg., Gynec. & Obst. **101**:133-140 (Aug.) 1955 [Chicago].

Twenty-six patients with carcinoma of the ovary, who had previously received surgical treatment and usually also x-ray therapy and who then showed recurrent and progressive disease, were treated with triethylene melamine (TEM). The drug was given by the intravenous and oral routes. The intravenous daily dosage was usually 3 to 4 doses of 0.04 mg. per kilogram of body weight (2 to 3 mg.). The injection was usually given into the tubing of an intravenous infusion set. Nausea and vomiting rarely occurred at the recommended dosage, although the patients occasionally complained of anorexia. The drug was available for oral use in 5 mg. scored tablets. The usual dose was 2.5 to 5 mg. per day for one or two days. The tablet was usually taken an hour before breakfast, with water. About half of the patients complained of anorexia, mild nausea, and dizziness at some time during treatment. The average oral dose was 20 to 40 mg. during the first month. The dosage was estimated at intervals of one or two weeks on the basis of the patient's hematological and clinical response. If satisfactory improvement followed, the patient was put on a maintenance dose, while being kept under hematological control. Fourteen of the 26 patients obtained some symptomatic improvement, and 8 of this group showed objective evidence of tumor regression. Improvement usually persisted for from one to three months. One patient showed benefit for a period of 11 months, and another has shown no evidence of recurrent disease for four years. The latter case may represent a spontaneous remission. On the basis of these responses, an adequate trial of triethylene melamine or of a related compound is indicated in patients with nonresectable or recurrent ovarian cancer. Triethylene melamine may precede, follow, or be administered concurrently with, x-ray therapy.

Carcinoma of Breast During Pregnancy. J. R. Firpo. Rev. Asoc. méd. argent. **69**:84-86 (April 15-30) 1955 (In Spanish) [Buenos Aires, Argentina].

Two cases of cancer of the breast in pregnant women are reported. The first patient had a small nodule that appeared several years before pregnancy, developed slowly, and stopped growing for a year prior to pregnancy. After the fifth month of pregnancy the nodule rapidly grew into a tumor that became ulcerated. Biopsy showed carcinoma. The patient refused treatment. She returned to the hospital at full term of pregnancy, in cachexia. The tumor was very large and ulcerated. Delivery was spontaneous with birth of a normal child. The placenta was normal. The course of cancer became accelerated early in the

period of lactation and the patient died late in puerperium. The second patient observed a tumor for the first time, coincidentally with early pregnancy. The tumor grew rapidly and became ulcerated. Biopsy showed carcinoma. The tumor was irradiated with protection of the fetus by covering of the mother's abdomen with a rubber apron. The patient had a premature baby in the eighth month of pregnancy, underweight but otherwise normal. The state of health of the patient rapidly deteriorated. Pleurisy from metastases developed early in the puerperium. The author concludes that the treatment of cancer of the breast is the same for pregnant as for nonpregnant women of the same age. For pregnant women there are the following indications: when the tumor is small and pregnancy is in an early stage, abortion and treatment of the tumor are indicated; in all other cases, hormones should be administered, surgery performed, or irradiation of the tumor given for as long as possible to favor viability of the fetus. Hormones, surgery, and radiotherapy are selected in accordance with the clinical type of the tumor. Irradiation is harmless for the fetus if the latter is well protected against it by covering of the mother's abdomen with the proper apron. At full term of pregnancy, spontaneous delivery or cesarean section is followed by castration, exeresis of the tumor, and postoperative radiotherapy or by radiotherapy alone if the tumor was removed during pregnancy.

Hypopituitarism (Sheehan's Syndrome) with Hyperlipemia and Xanthomas. N. Zöllner. Deutsche med. Wchnschr. **80:**999-1002 (July 1) 1955 (In German) [Stuttgart, Germany].

The author presents the history of a 34-year-old woman, who at the age of 21 had experienced severe hemorrhages following delivery of a normal child. After that amenorrhea resulted and the woman became increasingly apathetic. She complained of visual disturbances in the right eye. The body hair became scanty and on examination she showed signs of myxedema, xanthomatosis of the skin, hypotension (90/70 mm. Hg), bradycardia (50 per minute), increased blood sedimentation speed, moderate anemia, reduction of the basal metabolism, moderate hypoglycemia, pseudohemophilia, and a lipemia with increase in the neutral fats, phospholipids, and cholesterol. The excretion of corticoids in the urine was noticeably reduced. Ophthalmologic examination revealed fluctuating opacity of the vitreous of the right eye and chronic iridocyclitis. The turbidity of the vitreous as the result of lipemia was probably due to the concurrence of cyclitis and lipemia. The fact that only one eye was involved speaks against the causal role of hormonal factors. Under the influence of a diet with an extremely low fat content, the neutral fats in the serum decreased to normal values. The xanthomatosis likewise subsided, whereas the phospholipids and the cholesterol in the blood remained high and unchanged. Relapse followed when the patient returned to a normal diet. During cautious treatment with a thyroid preparation, the general condition improved greatly and the plasma fats became normalized. The author feels that this was a case of Sheehan's syndrome, which is characterized by hypogenitalism, hypothyroidism, and hypoadrenocorticism, all of which are elicited by hypofunction of the hypophysis.

THERAPEUTICS

Treatment of Cardiac Insufficiency with an Oleander Combination Preparation: Preliminary Results. C. G. Bär and G. Zeitler. Deutsche med. Wchnschr. **80:**1038-1039 (July 8) 1955 (In German) [Stuttgart, Germany].

Sixty patients with cardiac decompensation were admitted to the medical clinic of the university of Erlangen, Germany, and were treated with oleandryl compound, one tablet of which contains 0.05 gm. of the total glucoside of oleander, 12 mg. of pentaerythritol (Peritrate) tetranitrate and 25 mg. of sodium cholate. The authors' preliminary report is concerned with 33 of these patients who were discharged from the hospital after four weeks of treatment that was continued ambulatorily with the patients followed up for periods up to nine months. Of these 33 patients, 27 women and 6 men, whose average age was 54 years, 9 had decompensated mitral and aortic lesions, 9 had decompensated hypertension, and 15 had cardiac muscular insufficiency caused by coronary sclerosis. Five of these 15 patients had bronchopneumonia associated with high fever. Five patients with most severe cardiac decompensation were given initial treatment with strophanthin and digitoxin for a short period. Treatment with oleandryl compound was instituted after partial compensation had been achieved. The dose of the oleandryl compound varied according to the severity of the clinical state. In general, treatment was started with three tablets daily and, when necessary, the dose was doubled. Diuresis was the guiding factor. The tolerance to the drug was good; undesirable side-effects such as nausea, vomiting, and diarrhea were not observed, not even after the administration of nine tablets daily. In general, six tablets daily were sufficient for prompt and continued diuresis even in patients with severe decompensation of the right and left side of the heart in whom satisfactory removal of water could not be obtained by combined treatment with strophanthin and aminophylline. Of 23 patients who complained of angina pectoris, 19 obtained complete relief with the oleandryl compound. The evaluation of the patients' electrocardiographic records was difficult because of physiological variations in the daily rhythm. In 27 of the 33 patients, the electrocardiogram showed an abnormal curve with definite signs of damage to the muscle associated with heart action. Repeated electrocardiographic recordings in the course of the treatment with the oleandryl compound did not show excessive bradycardia, disturbances of transmission, and extrasystoles that may be frequently observed in the course of treatment with high doses of digitalis. Pronounced lowering of the ST interval, which may occur in the course of treatment with strophanthin or with the glucosides of Digitalis purpurea or Digitalis lanata, was not observed. Although the number of patients treated with oleandryl compound is small, the results obtained suggest that the drug is of value in the treatment of patients with mild or moderately severe forms of chronic cardiac decompensation, particularly in the treatment of the so-called old-age-heart. The drug is particularly suitable for ambulatory treatment, since a cumulative effect or undesirable side-effects need not be feared even after prolonged administration.

Comparative Clinical Study of Some Glycosides of Digitalis Lanata. F. Testoni and G. Lomeo. Cuore e circolaz. **39:**65-85 (April) 1955 (In Italian) [Rome, Italy].

Comparative studies on three glycosides of Digitalis lanata, lanadigin, Digoxin, and lanatoside C, were carried out on 183 cardiac patients with circulatory failure. The results indicated that the therapeutic properties of the three drugs are essentially the same. The following differential characteristics were found: (1) the total initial digitalization dose that is needed when average daily doses are given orally is noticeably greater for lanatoside C (an average of 10 to 12 mg. in three to five days) than for lanadigin and Digoxin (an average of 6 to 8 mg. in three days); (2) the same is true of the daily maintenance doses, an average of 1 mg. for lanatoside C as compared with an average of 0.5 mg. for the other two drugs; (3) the ratio between the effectiveness of the orally given dose and that of the dose given intravenously is higher for Digoxin than for lanatoside C; (4) the duration of the therapeutic effect of lanatoside C is notably shorter than that of the other two drugs; and (5) the onset of toxic side-effects is commoner following the use of lanatoside C. The authors ascribe these findings to a more rapid elimination of lanatoside C through the kidneys and a more prolonged fixation of lanadigin and Digoxin on the heart muscle. They conclude that these two glycosides of Digitalis lanata are more suitable than lanatoside C for the initial treatment with average doses given orally, because the clinical findings are restored to normal more quickly. Lanatoside C gave good results when it was given intravenously. Therefore, when large initial doses are required, as in the presence of paroxysmal attacks, atrial arrhythmias with high ventricular frequency, sinus tachycardia, and all cases that call for urgent treatment, lanatoside C given intravenously in doses of 1.2 to 1.6 mg. in 24 hours is the therapy of choice. For maintenance therapy, lanadigin and Digoxin given orally are more suitable because smaller doses are sufficient, the therapeutic results are more stable, and the oral route of administration is convenient.

Treatment of Benign Arterial Hypertension with Rauwolfia Serpentina: Forty Cases. R. Armas Cruz, M. Alvo, J. Harnercker and others. Rev. méd. Chile **83:**283-288 (May) 1955 (In Spanish) [Santiago, Chile].

Forty patients with arterial hypertension were treated with Rauwolfia serpentina. The majority of the patients were women of the average age of 55. Hypertension was benign, either essential or associated with arteriosclerosis in 37 patients, associated with chronic glomerulonephritis in 2 and malignant in 1. The electrocardiogram showed signs of moderate preponderance of the left ventricle in 12 patients. Roentgen examination of the heart showed moderate enlargement of the shadow of the left ventricle in 19 patients. Examination of the fundus of the eye in 27 patients showed arteriosclerosis of the retinal vessels. The treatment was given to patients during rest and on a diet with salt restriction. The preparation used contained 75% of semitotal alkaloids of the drug. It was given orally at daily progressive doses of from 4 mg. to 12 or 16 mg. for an average period of 72 days. Pure crystalline reserpine was used only in rare cases and if so used, temporarily and in daily doses that varied from 0.6 to 1 mg. All patients reported great improvement of headache, palpitation of heart, and tachycardia. Twenty-one patients exhibited complete tolerance of the drug, 16 complained of transient somnolence, nausea, and vomiting, 5 of moderate nasal congestion, and one of bronchitis that made temporary discontinuation of the treatment necessary. The results are evaluated only in relation to the hypotensive effect of the drug. The drug caused lowering of the systolic pressure of more than 20 mm. Hg in 55% of the cases. The percentage was higher in patients with the essential type of arterial hypertension. Only one patient in the group with arterial hypertension with arteriosclerosis did not react to the hypotensive effect of the drug. Low figures of arterial hypertension did not change in some patients who discontinued the treatment on their own accord. The author concludes that Rauwolfia serpentina is of great value in arterial hypertension, chiefly in essential hypertension. The patient with malignant hypertension in the group of patients observed by the author did not report for further observations.

Anticoagulation Treatment with Tromexan and Marcoumar: Micromethod Determinations of Prothrombin-Proconvertin Activity. T. Iversen. Ugesk. læger **117:**873-878 (July 7) 1955 (In Danish) [Copenhagen, Denmark].

Since June, 1954, initial anticoagulation treatment with Tromexan-Marcoumar has been applied in 33 patients (27 with coronary thrombosis, 3 with deep venous thrombosis, 2 with thrombosis in the central retina vein, and in one patient prophylactically). In 23 cases the initial dose was 900 mg. Tromexan plus 9 mg. Marcoumar given simultaneously. Twenty-four hours after the initial dose the prothrombin-proconvertin activity had fallen to an average of 27%. In 10 patients who were especially exhausted and/or had lowered prothrombin-proconvertin activity before treatment, the initial dose was 600 or 900 mg. Tromexan plus 6 mg. Marcoumar. Here the average prothrombin-proconvertin activity was 31% after 24 hours. If an immediate anticoagulant effect is wanted, heparin must be given; three or four intravenous injections in the first 18 hours usually suffice. Maintenance treatment was given with Marcoumar exclusively. In most cases a single daily dose allows the prothrombin-proconvertin concentration to be kept within 10 to 30%. The maintenance dose will as a rule lie between 1.5 and 3 mg. Marcoumar, but individual sensitivity varies greatly. Thirty-one patients were treated for more than a week, 20 for more than five weeks. Of the 27 patients with coronary thrombosis, 7 died during treatment. Before start of the anticoagulation treatment the prothrombin-proconvertin activity must be determined, as the continued dosage depends on the initial reduction of the activity. When the maintenance dose is established, determination of the concentration once weekly is generally sufficient, which makes long-time treatment possible. Apart from light nosebleed in one case, no tendency to bleeding or other side-effects was observed during the anticoagulation treatment.

Nonhemorrhagic Accidents in Heparin Therapy. L. Mathieu, M. Rémy, C. Pernot and others. Presse méd. **63:**1023-1025 (July 9) 1955 (In French) [Paris, France].

The nonhemorrhagic accidents of heparin therapy manifest themselves either as shock reactions or as blood hypercoagulability without shock phenomena. Though most are without lasting effect, there have been deaths from heparin administration. The incidence of these accidents is small. An analysis of the shock phenomena reported during various programs of heparin treatment shows that they vary widely in form and are independent of the amount injected or the brand used. Their severity is somewhat related to the severity of the disease and the age and condition of the patient. The commonest symptom of the shock phenomena associated with heparin administration is sharp pain in the legs. These accidents appear to be independent of those caused by excessive hypocoagulability. As to their cause, it can be said that imperfections in the products used and the unwitting introduction of pyrogens are becoming rarities, that spontaneous intolerance to heparin is still open to question, and that, rarely, heparin gives rise to intolerance reactions in allergically predisposed patients. However, the most significant type of accident is that occurring during a repeated course of therapy after interruption; here it seems that the particularly strong aggression of abrupt variation in coagulability can cause serious accidents in badly prepared, poorly fortified patients. Accidents of secondary hypercoagulability are also the result of discontinuous or abruptly interrupted therapy. The disturbances in coagulation of the original disease play a large part in the cause of these accidents. The existence of these nonhemorrhagic accidents is not sufficient reason to modify the indications for heparin treatment but should urge better, more careful conduct of the administration of the substance.

Long-Acting Coronary Vasodilator Drugs: Metamine, Paveril, Nitroglyn and Peritrate. H. I. Russek, B. L. Zohman, A. E. Drumm and others. Circulation **12:**169-175 (Aug.) 1955 [New York].

The modifying action of four long-acting coronary vasodilator drugs, namely, triethanolamine trinitrate biphosphate (Metamine), dioxyline phosphate (Paveril), glyceryl trinitrate in a sustained-action tablet (Nitroglyn), and pentaerythritol tetranitrate (Peritrate), on the electrocardiographic response to standard exercise (Master-two-step test) was recorded and compared in 21 carefully selected patients with coronary disease. The drugs were administered from one to six hours before the exercise test. Metamine produced little or no significant effect on exercise response as measured electrocardiographically in all the patients. Paveril in some instances was mildly effective, but its action was not sustained and its influence was never striking even with massive doses. Only 6 of the 21 patients showed significant improvement in exercise response following the use of this drug. Paveril does not appear to be as potent as papaverine in comparable dosage. Nitroglyn, despite the effectiveness of glyceryl trinitrate in the treatment of the acute attack of angina pectoris and in prophylaxis when employed before contemplated exertion, gave disappointing results. In the usual recommended dose of 2.4 mg. (0.04 grain), the preparation appeared totally inert. With larger doses, 4.8 to 9.6 mg. (0.08 to 0.16 grain), Nitroglyn produced slight to moderate improvement in exercise response for a period of six hours after its administration in almost two-thirds of the patients tested. Nevertheless, the drug failed to induce a normal electrocardiographic response to exercise in any of the 21 patients, a result far surpassed by the sublingual administration of glyceryl trinitrate and by Peritrate respectively. Peritrate, in a dose of 10 to 20 mg., showed a marked modifying influence on the response to standard exercise in 14 of the 21 patients tested. The effect of this agent was comparable to that of glyceryl trinitrate, but its action, after a latent period of 60 to 90 minutes, could be demonstrated as long as five to six hours after the administration of a therapeutic dose. Clinical response was markedly attenuated or totally abolished, however, when Peritrate was taken after food. Of the four drugs tested, only this

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agent appears worthy of the designation "long-acting coronary vasodilator." Peritrate appears to satisfy the need for prolonged coronary vasodilatation in most patients with angina pectoris.

Experiences with a New Local Antibiotic. H. Klima. Wien. klin. Wchnschr. **67:**524-526 (July 22) 1955 (In German) [Vienna, Austria].

Nebacetin, a combination of neomycin and bacitracin, was applied locally in 26 patients with pulmonary tuberculosis who were treated at the sanatorium Baumgartner Höhe near Vienna, Austria. Of 14 of these patients who had been treated previously with sulfonamide, penicillin, oxytetracycline, and streptomycin and had become resistant to these drugs, 5 had chronic fistulas with mixed infection occurring after empyema and reconstructive plastic surgery; 6 had fistulas occurring after plastic repair following lobectomies and pneumonectomies, respectively; 2 had fistulas of soft tissues; and one an internal bronchial and external thoracic wall fistula after pneumothorax empyema. Instillation of the drug, which was diluted with isotonic sodium chloride solution to an amount of from 2 to 10 cc. according to the size and extent of the sinuses of the fistulas, was carried out with a blunt needle through a drain; 5 to 10 mg. of Neomycin and 250 to 500 units of bacitracin per 10 kg. (22 lb.) of body weight were administered three to four times in the course of one week, or daily if required. In 9 of the 14 patients, the fistulas healed completely in the course of two to six months of treatment; the 5 other patients were improved. The satisfactory results obtained in these 14 patients prompted the author to broaden the indications for local treatment with Nebacetin, and to use the drug for the postoperative treatment of five patients who had undergone cavernostomy, for cavity acupuncture and cavity plombage, respectively, in five patients, and as an aerosol in two patients with bronchiectasis. In the five patients with cavernostomies, cleaning of the wall of the cavity occurred rapidly, and fresh granulation tissue particularly rich in vessels developed. Cavity smears and sputums became rapidly free from bacteria. Similar phenomena apparently occurred in the wall of the cavity of the patients with cavity acupuncture. In the patients with bronchiectasis, the amount of sputum diminished and the offensive odor from the mouth subsided. Complications or undesirable side-effects did not occur in any of the 26 patients. The value of the new local antibiotic seems to consist of its efficacy in patients who already have become resistant to penicillin, oxytetracycline, and streptomycin and of the fact that, as a purely local antibiotic, it may hardly cause resistance or hypersensitivity to the drugs that are generally used.

Study on Removal of Water with Diamox in Cirrhosis of the Liver. E. Rissel, H. Schnack and F. Wewalka. Schweiz. med. Wchnschr. **85:**698-702 (July 16) 1955 (In German) [Basel, Switzerland].

Carbonic anhydrase, a zinc-containing protein, is contained in the tubular cells of the kidneys and apparently influences the kinetics of hydration and dehydration of carbon dioxide in these cells. Diamox (2-acetylamino-1,3,4-thiodiazole-5-sulfonamide), a powerful carbonic-anhydrase-blocking agent, was given to 13 patients with decompensated cirrhosis of the liver, 4 patients with cardiac decompensation, and 2 patients with edema of different genesis. Of the 13 patients with cirrhosis of the liver, an abundant diuresis occurred in 8 who thus showed a satisfactory response to Diamox. No difference in this response was observed in patients with ascites and general edema and in those with ascites only. The reduction in body weight varied from 5 kg. (11 lb.) to 15 kg. (33 lb.). Satisfactory diuresis also resulted from the administration of Diamox in four of the six patients with the other disorders. The authors recommend a dose of 250 mg. of Diamox given orally in one tablet in the morning on three successive days in the course of one week and repeated for three to five weeks. Most of the patients who did not respond to the administration of Diamox with a satisfactory diuresis had a markedly increased excretion of sodium and potassium. This dissociation of the water metabolism and the electrolyte metabolism, in contrast to the otherwise strictly coupled water and electrolyte excretion, seems to be noteworthy with regard to the mechanism of sodium retention in patients with cirrhosis and cardiac disease. The drug was ineffective in patients with excessive potassium excretion. Its effect could not be enhanced by the additional administration of potassium. Undesirable side-effects of Diamox were not observed. Mild drowsiness occured, and on several successive occasions one patient had tremor that always subsided after discontinuation of the drug.

Modern Therapy of Gout. F. Koller. Schweiz. med. Wchnschr. **85:**693-697 (July 16) 1955 (In German) [Basel, Switzerland].

Twenty-seven patients with 51 attacks of acute gout were treated with Irgapyrin, a proprietary pyrazolidin containing equal parts of phenylbutazone and aminopyrine, and with phenylbutazone (Butazolidin). The average daily dose of Irgapyrin given intramuscularly was 1.5 gm., and the average daily dose of phenylbutazone given orally varied from 0.6 to 1 gm. A complete remission resulted within 48 hours in 42 attacks; Irgapyrin was given in 27 of these attacks and phenylbutazone in 15. Because of their rapid and reliable effect, Irgapyrine and phenylbutazone are superior to colchicine and corticotropin (ACTH) in acute attacks of gout. Phenylbutazone enhances the excretion of uric acid and thus produces a pronounced decrease of the serum level of uric acid. The intramuscular injection of Irgapyrin should be given into the gluteus medius, above and outside the gluteus maximus, to prevent the undesirable side-effect of sciatic pain. Other undesirable side-effects such as a tendency to retention of sodium chloride and water, leukopenia, and agranulocytosis are of minor importance in the course of the short-term treatment of the acute attack of gout. In chronic tophaceous gout, probenecid (Benemid) is the drug of choice; its average daily dose is 1 gm.

Treatment of Granulocytic Leukemia with Myleran and Demecolcin. W. Pribilla and G. Stollberg. Deutsche med. Wchnschr. **80:**1027-1029 (July 8) 1955 (In German) [Stuttgart, Germany].

Of 16 patients between the ages of 18 and 71 with chronic granulocytic leukemia, 10 were treated with 1,4-dimethanesulfonoxybutane (Myleran) and 6 with desacetyl-methylcolchicine (Demecolcin), an alkaloid obtained from Colchicum autumnale. The initial daily dose of Myleran varied from 4 to 6 mg. given orally, and the maintenance dose varied from 2 mg. given three times in the course of one week to 2 mg. given daily. The maximum total dose of Myleran was 458 mg. given in the course of 130 days. Results were satisfactory in 9 of the 10 patients treated with this drug. The general condition was improved and the number of leukocytes was reduced. There was an increase in the number of erythrocytes and in the hemoglobin level. The effect of the drug became apparent within three weeks. The peripheral blood cell count showed a decrease in myeloblasts and a reduced shifting to the left. The blood count in several patients was restored temporarily to normal. Leukopenia and thrombopenia were not observed. Diminution in the size of the spleen was impressive and rapid. Only one patient with a relatively immature type of leukemia and a large number of myeloblasts in the blood and in the marrow did not respond to Myleran. Demecolcin was also given orally; the initial daily dose was one tablet containing 1 mg. of the drug. The daily dose was increased up to 10 mg. The total dose varied with the individual patient and frequently reached several hundred milligrams. In general, the tolerance to the drug was good. Occasional side-effects consisted of loss of hair and herpetiform stomatitis. Satisfactory results were obtained in three of the six patients treated with Demecolcin; a complete remission occurred in one of these patients. Both Myleran and Demecolcin inhibit chiefly the myelopoiesis and are, therefore, suitable for the treatment of chronic granulocytic leukemia. When used cautiously, both drugs have few undesirable side-effects and therapy may be continued safely for many months. The therapeutic effect of Myleran seems more reliable than that of Demecolcin.

Data on Deaths Due to Agranulocytosis in the Netherlands. B. J. Salomonson. Nederl. tijdschr. geneesk. **99:**2044-2047 (July 9) 1955 (In Dutch) [Haarlem, Netherlands].

Because of the increased recording of agranulocytosis on death certificates, the author, who is connected with the central statistical office in the Netherlands, investigated this problem, giving particular attention to the cause of agranulocytosis.

Analysis of the causes of fatal agranulocytosis for the year 1952 showed an increase in the group in which drugs were the cause, and in 1954 the group with "unknown cause" showed an increase, but the author feels that the "unknown" cause may also have been a drug in many instances. In a table the author shows data on 184 fatalities of the years 1952 to 1954, in which agranulocytosis was given as a cause of death. Drugs were indicated as the cause in 103 of these cases, and "cause unknown" was listed in 39 cases. Further analysis of the 103 cases in which drugs were the cause revealed that a proprietary brand of aminopyrine had caused the agranulocytosis in 41 cases, another proprietary containing equal parts of phenylbutazone and aminopyrine was responsible for 13, sulfonamide preparations for 13, and gold for 6 fatalities; various other drugs were responsible for fatal agranulocytosis in the other 30 cases. The aminopyrine and other antipyretic drugs had been prescribed chiefly for chronic rheumatic disease.

Heparin and Corticotropin (ACTH): Analogies and Differences. F. De Matteis. Minerva med. **46:**1800-1804 (June 20) 1955 (In Italian) [Turin, Italy].

The results of clinical and experimental studies of the author and of German workers seem to support the hypothesis advanced by De Matteis in March, 1953, that heparin has a corticotropin-like action. The properties common to the two substances are: (1) stimulation of the adrenals and the thyroid and marked involution of the thymus (more evident after a short treatment period); (2) induction of severe endocrine alterations after prolonged administration of the two substances; (3) a hypocholesterinemic effect, especially on esterified cholesterol; (4) an action that modifies paper electrophoresis with a decrease of the albumins and a marked increase of the globulins; (5) an "anti-sludging" action; (6) an antianaphylactic action, which is less evident with regard to corticotropin; (7) a marked effect (antihyaluronidase and antiexudative) on the phenomena of diffusion; (8) a constant effect on peripheral eosinopenia; and (9) an antirheumatic action with respect to acute rheumatic disease in children. The endocrine alterations that are induced by the prolonged administration of the two substances are: (1) a marked loss of weight with partial atrophy of the skin and (in the animal) a more or less diffuse loss of hair; (2) a decrease in the weight of the testicles and the spleen; (3) hyperemia and edema of the hypophysis; (4) an increase in the weight of the liver and the kidneys; and (5) a slight increase in the weight of the thyroid. The action of the two substances differs with regard to the blood coagulation process, heparin prolonging it and corticotropin shortening it. However, if the two substances are used concurrently, the anticoagulant effect of heparin is increased. The reciprocal interferences and the eventual synergisms between the two substances are possible, however, only when large doses of heparin and pure preparations of corticotropin are used.

PATHOLOGY

Mycelial Forms of Coccidioides Immitis in Sputum and Tissues of the Human Host. M. J. Fiese, S. Cheu and R. H. Sorensen. Ann. Int. Med. **43:**255-270 (Aug.) 1955 [Lancaster, Pa.].

Coccidioides immitis ordinarily exists in two distinct phases, the saprophytic and the parasitic; the former, in which the fungus presents itself as a mycelial mass of hyphae, occurs in external nature and culture mediums, while in the parasitic phase the fungus has the appearance of an endosporium or spherule that occurs in animal tissues. Under certain conditions the spherules may be observed in artificial culture mediums, but, as a rule, the hyphae have not been observed in the tissues of the host. The first exceptions to this rule were the recently reported observations of hyphae of Coccidioides immitis in two types of benign residual pulmonary lesions, namely, chronic cavitation and chronic granuloma. Of 98 patients with coccidioidomycosis studied at the Veterans Administration Hospital in Fresno, Calif., 17 had persistent pulmonary lesions without dissemination. Nine of the 17 patients had cavities and 8, granulomas. Mycelial forms of Coccidioides immitis were observed in the sputum of four of the nine patients with coccidioidal cavities of the lungs. This finding has not been previously reported. Pulmonary resection or lobectomy was performed in 12 of the 17 patients, eight times for cavities and four times for granuloma. Mycelial forms of the fungus were observed in the pathological specimens of three patients with cavities and of three others with granulomas. Mycelial forms are most likely to be found on the surface of the wall of a cavity or within the necrotic debris of a granuloma. Mycelial forms will be observed with increasing frequency in tissues and discharges when the search is made in the right place with adequate stains, such as the Hotchkiss-McManus stain or fountain pen ink. Despite the theoretical risk associated with the presence of mycelial forms in the sputum of patients with coccidioidomycosis, contagiousness of coccidioidomycosis has not been demonstrated.

Interpretation of Tuberculous Lesions After Chemotherapy. J. C. Dick. Lancet **2:**216-223 (July 30) 1955 [London, England].

A fairly definite picture is now available of the changes that take place in tuberculous lesions after chemotherapy with different drugs, although there is considerable overlap in the changes found in untreated cases on the one hand and in treated cases on the other. This report is concerned chiefly with the average reactions to various drugs. The differences between the changes in recent tuberculous lesions after chemotherapy with a combination of drugs including isoniazid and those after a streptomycin combination suggest that isoniazid enables a toxic factor to be removed and real healing to occur. The same difference is present early in the treatment of chronic lesions, enabling a larger proportion of isoniazid-treated lesions to attain a satisfactory quiescent stage. Histological evidence is presented for the persistence throughout chemotherapy of dormant bacilli, that is, of bacilli that are in a state of metabolic inactivity, not reproducing, not susceptible to antibiotics, not necessarily capable of growth on ordinary media, perhaps not visible on microscopy, but able to reassume any or all of these properties. Chemotherapy with a single drug leaves a considerable proportion of lesions active, probably by altering the metabolism of the organisms so that they are no longer affected by the drug. In vitro testing for the sensitivity of the organism to the drug, although it is the only method available, is not a fully reliable index of this altered metabolic state. Streptomycin and isoniazid appear to influence the metabolism of the pathogenic organisms in different ways, and given in full doses they are apparently synergistic, since the best healing of lesions is obtained with this combination. Patients with recent lesions should be treated with a combination of chemotherapeutic drugs that includes isoniazid, to obtain resolution. The drugs should be used in their full therapeutic doses, that is, isoniazid, 200 mg. daily; streptomycin, 1 gm. daily; and aminosalicylic acid, 10 to 20 gm. daily. Diminished dosage scales should not be tried unless tests have shown them to be as effective clinically, bacteriologically, and histologically as the full doses. Patients with mixed old and recent lesions should receive similar treatment, to obtain as much resolution as possible. Resection may have to be employed to remove the remaining lesions.

RADIOLOGY

Cervical Air Myelography: Review of 130 Cases. F. Murtagh, W. E. Chamberlain, M. Scott and H. T. Wycis. Am. J. Roentgenol. **74:**1-21 (July) 1955 [Springfield, Ill.].

Air myelography is a harmless and effective method of visualizing the cervical canal and cord. It has a definite diagnostic value and is often sufficient for accurate localization, even demonstrating in some cases types of involvement of the spinal cord that cannot be seen with positive contrast. Care must be taken to secure the best possible contrast and detail in the roentgenograms, because the negative contrast obtained with air is certainly less striking than that provided by the radiopaque agents. Accurate diagnosis with air myelography depends on painstaking study of stereoscopic films of good technical quality and careful correlation of the findings so obtained with the neurological findings and the clinical symptoms exhibited by the patient during the procedure. Small quantities of air (5 cc.) are sufficient to demonstrate the lower edge of a lesion that com-

pletely blocks the cervical spinal canal, but larger quantities are needed for the visualization of nonobstructive lesions. The authors therefore devised a method of examination in which, by maneuvering the patient into various positions, 40 or 50 cc. of air injected into the lumbocaudal canal can be moved into any desired section of the spinal canal. Localized sensation, ranging from mild pressure to moderate pain, will be felt by the patient as the air seeks its upper level in the spinal canal and his subjective reaction can be used as a guide in following its upward progress. The air itself is innocuous and completely absorbable. Encephalomyelography, in which air is exchanged for fluid in the cerebrospinal canal in 10 cc. increments, was found to be the most effective method of visualizing the cervical canal and the cord and its relationship to the brain. It is recommended in cases in which the other two methods have failed to produce satisfactory visualization or in which a combined study is desired. Air myelography by one or more of these methods was carried out 142 times in 130 patients with symptoms suggesting cervical spine or cord abnormality seen at Temple University Hospital during the period from 1934 to 1949. Malformations of the cervical spine with cord compression, trauma to the cervical spine, intervertebral disk herniations and osteophytosis, and space-taking lesions of the cervical canal were among the conditions in which useful diagnostic information was obtained. The excellent visualization of the cord provided by air myelography in the cervical region is especially valuable in patients with degenerative lesions of the central nervous system. An appreciable widening of the visible air column beyond one-third the width of the bony canal in patients presenting clinical evidence of central nervous system disease without a demonstrable encroaching lesion suggests cord atrophy regardless of the measurable cord thickness. Individual variations and variability of roentgenographic magnification prevent the establishment of a fixed figure for normal cord thickness, but in all the cases in which a diagnosis of cord atrophy was made myelographically the cord measured considerably less than 8 mm. in thickness. Air myelography possesses the added advantage of being completely roentgenographic; the films obtained can be studied repeatedly by several examiners, eliminating the personal equation found in roentgenoscopy with opaque media.

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Uptake and Blood Level of Radioactive Iodine in Hyperthyroidism. R. A. Newburger, S. Silver, S. B. Yohalem and S. Feitelberg. New England J. Med. **253:**127-130 (July 28) 1955 [Boston].

Data obtained from the study of 500 consecutive patients referred to the Thyroid Group of the departments of medicine and physics of the Mount Sinai Hospital were used in comparing the merits of two radioactive diagnostic techniques. The thyroid uptake at 24 hours after the tracer dose and the blood plasma levels of protein-bound I^{131} at 72 hours after the tracer dose were determined in each patient. The patients were classified as normal (euthyroid) (404) or hyperthyroid (96) before the I^{131} studies were carried out. The group as a whole included only patients who had had no previous treatment directed to their thyroid glands. Patients who had received stable iodine medication in any form were either excluded or a period of time sufficient to ensure the disappearance of all effects produced by such medication was allowed to elapse before the tests were made. Comparison of the results obtained showed that uptake studies are less accurate as a diagnostic method than the determination of protein-bound I^{131} levels at 72 hours after the tracer dose. Acceptance of a critical value for the protein-bound I^{131} of 0.27% of the administered dose per liter of plasma was associated with eight diagnostic errors, or 1.6% of errors in classification. These figures were increased to 36 and 7.2%, respectively, when the critical uptake value was taken as 61%. A critical range, rather than a critical value, had to be selected in order to reduce the diagnostic error of the uptake method to that obtained by the determination of the protein-bound I^{131} (1.6%). This range was fixed at an uptake between 42% and 69%; when values below 42% were used to diagnose the euthyroid state and those over 69% were used to diagnose hyperthyroidism, the total diagnostic error was the same as that obtained by the protein-bound I^{131} method, that is, 1.6%. The number of patients left unclassified by the use of this diagnostic range, however, was 127, or 25% of the entire series, as opposed to no cases left unclassified when the protein-bound I^{131} method was used.

Radiation Sickness in Man Following the Administration of Therapeutic Radioiodine: Relationship Between Latent Period, Dose-Rate and Body Size. J. D. Abbatt, W. M. C. Brown and H. E. A. Farran. Brit. J. Radiol. **28:**358-363 (July) 1955 [London, England].

The authors observed the symptoms of radiation sickness in 28 of 38 patients who had received a total of 44 doses of radioiodine in the form of I^{131}. The quantities administered varied from 29 to 200 mc.; these doses were given orally, after fasting, on 39 occasions and intravenously on 5. All patients were kept in bed; the only movements they made were those involved in the measurement of iodine uptake in functioning tissue and those required in routine nursing. The patients suffered from a number of clinical conditions, and there was a considerable variation in the volume, distribution, and activity of the functioning thyroid tissue present in each patient. Prior to irradiation all received treatment with an antithyroid drug in order to increase the uptake of iodine in the thyroid tissue when the drug was withdrawn. The symptoms resembled those occurring after a single x-ray dose. The latent period prior to onset of symptoms after radioiodine administration varied between 4 and 13 hours, compared with latent periods of 2 to 5 hours after medium voltage x-rays. It is suggested that the dose rate may be an important factor in the production of the symptoms of radiation sickness.

Further Consideration of Deaths and Unfavorable Sequelae Following the Administration of Contrast Media in Urography in the United States. E. P. Pendergrass, P. J. Hodes, R. L. Tondreau and others. Am. J. Roentgenol. **74:**262-287 (Aug.) 1955 [Springfield, Ill.].

Of 3,300 questionnaires sent to the membership of the American College of Radiology, 1,371 were answered, representing a response rate of 41.5%. Of the 1,371 replies, 1,249 gave complete information and were used in the authors' survey of deaths and unfavorable sequelae following the administration of contrast mediums for the study of the urinary tract. The two most commonly used mediums, iodopyracet (Diodrast) and sodium iodomethamate (Neo-Iopax) accounted for approximately 94% of the urinary tract studies. Sodium acetrizoate (Urokon Sodium) was used in an additional 4.6%. The quantity of contrast mediums injected in the average-sized adult was 20 to 30 cc. With the exception of sodium acetrizoate, which was used relatively frequently in 70% concentration, the higher concentrations of the mediums were rarely used in intravenous urography. Thirty-one deaths, not previously recorded in the literature, occurred after the intravenous administration of the contrast mediums. Twenty-five deaths occurred in the course of the urographic examination, and six were delayed or not clearly caused by the procedure. These deaths occurred over an 11 year period (1942 to 1952) in a series of approximately 3,800,000 urograms. In a previous survey published by Pendergrass and co-workers in 1942, 661,800 urographic examinations were reported and there were 26 deaths. Thus the percentage of deaths in the recent survey is exceedingly low. Brief histories of each of the 31 patients who died are given. The immediate deaths were preceded by dyspnea, cyanosis, hypotension, and convulsions. Sensitivity tests were performed in 15 of the 25 cases of immediate death and were interpreted as being negative. Negative hypersensitivity tests are not reliable. It is generally believed that careful history with particular emphasis on allergy is important. Many workers combine this information with one of the sensitivity tests. In the presence of a positive test and a strong allergic history, the procedure of urography is not recommended. There is a definite trend toward the use of antihistaminics before or during the procedures of urography. Current ideas about the reactions to contrast mediums, the allergy problem, and preventive measures are briefly discussed. Many mechanisms of the mild and severe reactions are not understood and further clinical and fundamental research is not only desirable but essential.

BOOK REVIEWS

International Symposium. The Hypophyseal Growth Hormone: Nature and Actions. Editors: Richmond W. Smith, Jr., M.D., Physician-in-Charge, Division of Endocrinology, Henry Ford Hospital, Detroit, Oliver H. Gaebler, M.D., Head, Biochemistry Department, Edsel B. Ford Institute for Medical Research, Detroit, and C. N. H. Long, M.D., Sterling Professor of Physiology, Yale University School of Medicine, New Haven, Conn. Symposium was sponsored by Henry Ford Hospital and Edsel B. Ford Institute for Medical Research, Detroit, and held at hospital Oct. 27-29, 1954. Cloth. $12. Pp. 576, with illustrations. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1955.

Although no new facts or new viewpoints of major importance are here recorded, this volume gives the significant and established facts regarding the growth hormone and its effects. It is attractive, well arranged, and adequately illustrated, and appeared in the unprecedentedly short time of six months after the conference. It is arranged in five major sections, which are devoted respectively to bio-assay, the preparation and physicochemical properties of growth hormone, effects of the growth hormone on certain structures, the growth hormone and energy sources, the growth hormone and cellular systems, and the influence of the growth hormone on the mammary gland and on human metabolism. Fortunately, before plunging into the minute discussions of various aspects of the effects of the growth hormone in higher animals, the book is introduced by Paul Weiss, who with profundity discusses the biological phenomenon of growth in its broadest sense. Particularly excellent chapters cover our knowledge of the chemical nature of the hormone and the reliable tests of its effects, including a new test by Russell. The interrelations of the growth hormone with the other anterior hypophysial hormones, e. g., corticotropin, or with the hormones produced by other endocrine glands, such as insulin, constitute another field succinctly dealt with in this book.

The carping critic will discover and announce in no helpful way that the actual method of biochemical operation of the growth hormone has not been elucidated by all this effort. The comment is invidious and can be met by the simple statement that we do not as yet know completely the mechanism of action of insulin and its participation in carbohydrate metabolism. It was necessary to discover insulin, to purify it, and to then reap the rich harvest of experimentation with it. It was similarly necessary to demonstrate undeniable growth in animals as a result of anterior pituitary extracts and to detect the substance causing this growth. It has been established that the dramatic cessation of growth in hypophysectomized animals is due solely to the absence of this substance and that its subsequent presence will restore normal growth or lead to excessive growth (gigantism). The isolation of the growth hormone was more difficult, for the pituitary, unlike the pancreas, which has only one or two internal secretions, possesses six or seven of these substances. The book shows that a significant beginning effort in one direction, to elucidate the mode of operation of somatropin, is occurring, i. e., an examination of its possible effects on various enzyme systems by Gaebler and Bartlett. It was quickly seen that the pituitary thrust its ubiquitous influence into many phases of carbohydrate, protein, and fat metabolism. We now know that the growth and adrenotrophic hormones are primarily concerned here, and the clearly established metabolic effects of purified growth hormone are given in the monograph. This field was opened up by the early demonstration of hypophysial diabetes and by Houssay's discovery of the dramatic amelioration of diabetes from pancreatectomy if a concurrent hypophysectomy is done. Over 20 years of research have as yet not completely elucidated these phenomena.

The book's defects, which are few, include the omission of a badly needed author and subject index. It is not too much to state that because adequately trained participants in the symposium have brought this extensive and important material together into one place, the book will be indispensable for workers in the field and, indeed, for investigators in other fields of medical research.

The Postnatal Development of the Human Cerebral Cortex. Volume V: The Cortex of the Fifteen-Month Infant. By J. LeRoy Conel, Research Associate in Pathology, Children's Medical Center, Boston. Cloth. $12.50. Pp. 221, with 235 illustrations. Harvard University Press, Cambridge 38, Mass.; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, England, 1955.

This monograph is the fifth volume in a series devoted to a general survey of the postnatal development of the nerve cells in the human cerebral cortex for the purpose of observing what changes occur in the morphology of the neurons as development proceeds. In the present volume the cytoarchitectonic state of development at the age of 15 months is described, with some comparisons with brains at 12, 13, 14, and 18 months. Nine normal brains were studied. Criteria of selection and techniques of preparation and study of the material are described in volume 1 of the series. The text is devoted to a detailed exposition of the cytoarchitectonics of the cortex using the following criteria of development: (1) width (breadth) of the cortex and each horizontal layer; (2) number of nerve cells; (3) size of nerve cells; (4) condition of chromophil substance; (5) state of development of neurofibrils; (6) size, compactness of structure, and length of processes of nerve cells; (7) number, size, and patterns of distribution of pedunculated bulbs on neurons; (8) size and number of exogenous fibers; and (9) state of myelinization of nerve fibers. The text descriptions are organized according to these criteria for 43 areas, regions, and zones of the cerebral lobes and the rhinencephalon. A summarizing chapter discusses the findings in relation to earlier stages. In this section, there are also interesting speculations on possible correlations of structure with function in the light of these findings. The numerical data obtained from this study are presented in seven tables. Illustrations of microscopic sections from each area make up the greater part of the 109 plates and provide a photographic atlas of corticocellular anatomy as revealed by several neurological staining methods. The author's style of writing is plain and straightforward. Tables are of full page size and are remarkably uncluttered and easy to use. The photographic illustrations, which make up about one-third of the book, are of high quality. There are 32 references, a table of contents, and no index. The appearance of the book is pleasing, and it is well bound. It is difficult if not impossible adequately to summarize the findings reported in this work without extensive reference to the preceding stages of development that are set forth in previous volumes of this series. The present volume is a product of researches dedicated to the painstaking task of detailed study and exposition of the cytoarchitecture of the postnatal cerebral cortex, researches that are indispensable to advances in our understanding of the broader fields of cerebral function and behavior. The subject matter of this volume (and the series), because of its highly specialized nature, would not interest the casual reader, but rather those investigators whose researches require reference to detailed accounts of cerebral cytoarchitecture.

Pathology for the Surgeon. By William Boyd, M.D., F.R.C.S., F.R.C.P., Lecturer on Humanities in Medicine, University of Toronto, Toronto, Canada. Seventh edition. Cloth. $12.50. Pp. 737, with 547 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1955.

This new edition of a work last published in 1947, under the title, "Surgical Pathology," has been extensively rewritten, and some material added, much of which can be categorized as pathological physiology. The author is well known for his undergraduate textbook of pathology. This textbook is expressly intended as an adjunct to postgraduate surgical instruction. The material is largely confined to diseases of surgical interest but, within this limitation, is widely inclusive. It is arranged by

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

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system and organ and contains careful outlines. Bibliographies referring to more detailed discussion are appended to each section, and for the most part these are up-to-date and pertinent. Although an attempt has been made to present the material from the point of view of the clinician, this has not been entirely successful. For example, no account is given of the obscuring of the hilar structures by the inflammatory reaction accompanying acute cholecystitis or of the intimate relation of many duodenal ulcers with the head of the pancreas. This sort of pathology is of little interest to the pathologist, but of great importance to the surgeon. The defect is nowhere more obvious than in the illustrations. Excellent microphotographs are used, but the gross material is almost exclusively black and white, for the most part fixed, and often isolated in such a fashion as to make it difficult to relate to the whole organism. Little indication is given of the relation of the pathological process to the choice of surgical procedure. With the exception of the sections on cardiovascular diseases, which are inadequate, the text presents an excellent, lucid, and concise review of the disease states usually falling within the scope of the surgeon and presents controversial aspects fairly. It should be of great value as a supplement to clinical experience.

Radiographic Atlas of Skeletal Development of the Knee: A Standard of Reference. By S. Idell Pyle, Ph.D., and Normand L. Hoerr, Ph.D., M.D. Cloth. $4.25. Pp. 82, with 29 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1955.

The successors of the late Wingate Todd of the Brush Foundation and the department of anatomy of Western Reserve University have had access to one of the nation's principal collections of roentgenograms of the developing skeletons of normal white children of known age and social background. When they set about producing an atlas of the knee from birth to full maturation at the age of 18, they did a workman-like job. As in any atlas, the plates are the principal offerings, the written material being confined to a description of the plates and a discussion of the methods used in selecting from among many hundreds the particular roentgenograms reproduced in the atlas. In the early months of postnatal life, the changes in the size and shape of epiphyses and in the shape of the ends of the shafts adjacent to them are easy to see once they have been pointed out by the authors, and the development of the tibial tuberosity is a dramatic incident of the years between 12 and 17. For some of the intermediate years, however, the changes are much more subtle. The authors stress the fact that even in normal material, selected as carefully as theirs has been, some boys of 6 will show knee development that usually does not come until a child is 8, while others will not reach the 8 year development until the age of 10. It is unfortunate that after all these years so little of the Todd material has seen the light of day in a form available to the radiologists and clinicians who need it. Painstaking atlases like this book and the earlier ones on the hand are needed perhaps by anthropologists, but clinicians would be better served by a less meticulous but more complete atlas covering the foot, pelvis, spine, pectoral girdle, elbow, and skull. Professor Hoerr and his associates at Western Reserve are uniquely situated to prepare such a complete atlas, and their publisher should see to it that they do so in the near future.

Cardiology Notebook for Preliminary Instruction in Medical Curricula. Editorial Board: Alfred P. Fishman, M.D., chairman, and others. Columbia University College of Physicians and Surgeons. Cloth. $2.50. Pp. 97, with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England; 1955.

This small volume is not intended to be exhaustive or for the specialist. It does not replace larger textbooks or substitute for bedside teaching; it supplements rather than replaces. The arrangement is simple; for instance, on one page are specimens of electrocardiograms, and on the facing page a description of what may be observed and some pertinent case history data. This volume should be found interesting and informative by the student and also by the practitioner.

Philosophische Propädeutik der Medizin: Einführung in die allgemeinen geistigen Grundlagen (Geschichte, Philosophie, Biologie, Psychologie). Von Univ.-Professor Dr. Albert Niedermeyer. Band 1, Allgemeine Pastormedizin in zwei Bänden. Cloth. 128 schillings; 22.50 Swiss francs. Pp. 547. Verlag Herder, Wollzeile 33, Vienna 1, Austria, 1955.

The significance of this book is not immediately clear from the title page. It is the first of two volumes intended (page 2) to enable the medical student to find what could not be offered in his other medical courses, "especially a critical attitude toward the dogmatically transmitted descent theory, the biology of natural selection, and medical psychology." From page 132, one gathers that the book has developed in connection with a course in pastoral medicine required by the theological faculty of the University of Vienna. Accordingly, it covers in scholarly detail the whole field of medical philosophy and ethics, down to such minute questions as whether the papyraceous fetus has a soul at any time (page 483) and when the soul appears in the normal product of conception (page 412). The author's command of theological and philosophical literature is immense, and the results are important. His considerations lead him, for instance, to ridicule as insane (page 254) the suggestions of eugenicists for the improvement of the human race, to accept Kinsey's methods as right but his inferences as wrong (page 142), to denounce Einstein's relativism in science as leading to hopeless agnosticism (page 115), to blame Malthus (pages 171, 172) for ideas that Malthus explicitly deprecated, and to declare that "there can be no medical ethics" as long as science continues to teach Darwin's "false doctrine of evolution" (page 509). His line of reasoning finally leads him, as many others have been led, to defend not only the terrorizing of Galileo but also the burning of Giordano Bruno (page 115). This frightening conclusion should strike the student of logic as a *reductio ad absurdum* and should prompt him to question every premise and deduction in the book. To the author, however, there is but one truth, and it is knowable (page 115).

Any human act is necessarily followed by an endless train of consequences; hence, every physician realizes that his mission is more than just the relief of physical pain and the solution of immediate survival problems. His work is therefore sufficiently complex, but in Niedermeyer's philosophy there is the added difficulty that the fetus is tainted with original sin (pages 103, 491). Accordingly, the author is more concerned about the possibility of an eternity in limbo for the unbaptized than the possibility of a mere lifetime in earthly institutions for the unwanted or the handicapped. In his system of thought, the role of the obstetrician becomes complicated indeed. Most physicians will find this uncompromising philosophy confusing and cruel. In any case, the author has set it forth in black and white for all to judge.

Essentials of Biological and Medical Physics. By Ralph W. Stacy, Ph.D., Associate Professor, Laboratory of Biophysics, Department of Physiology, Ohio State University, Columbus, David T. Williams, Ph.D., Ralph E. Worden, M.D., Associate Professor, Physical Medicine and Rehabilitation, College of Medicine, Ohio State University, and Rex O. McMorris, M.D., Associate Professor and Chairman, Department of Physical Medicine and Rehabilitation, University of Louisville Medical School, Louisville, Ky. With introduction by Otto Glasser, Ph.D., F.A.C.R. Cloth. $8.50. Pp. 586, with illustrations. McGraw-Hill Book Company, Inc., 330 West 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1955.

The subjects discussed in this book include biophysical mechanics (such as motion, acceleration, elasticity, viscosity, and contraction), heat and thermodynamics, acoustics (including ultrasound), radiation (visible light, geometric optics, ionizing radiations), and electricity. Applications to therapy are suggested, but the book is occasionally weak and misleading on these points (e. g., ultraviolet radiation as a treatment for roentgen burns, page 260). The intention is to emphasize physical principles rather than therapeutic details. Applications to other aspects of medicine, however, are presented occasionally in especially interesting fashion. Examples are the use of polarized light to reveal the stresses in models of bones, the microscopy of contracting muscle, the physiology of dark adaptation, the effects of acceleration on aviators, the principle of the electron microscope, the uses of the centrifuge microscope, and the medi-

cal aspects of nuclear radiations. Since this book is probably destined to be a pioneer work in an important field, it is to be hoped that future editions will eliminate a number of faults. For example, opening chapters need to be illustrated by more specific instances. The section on instrumentation defines a "precision index" that, being based on mean deviations obtained by disregarding algebraic signs, does not fit well into further statistical procedure. It might be supplemented by consideration of validity and reliability indexes and of the conventional measures of central tendency and dispersion. The illustrations are good, the bibliography is adequate, and there is an index. The book should stimulate medical students, and it is recommended to physicians who wish to inform themselves about the rapidly developing field of medical biophysics.

Neuroglia: Morphology and Function. By Paul Glees, M.A., D.Phil., M.D., University Demonstrator and Lecturer in Physiology, University Laboratory of Physiology, Oxford, England. Publication number 260. American Lecture Series, monograph in American Lectures in Neurology. Edited by Charles D. Aring, M.D. Cloth. $5. Pp. 111, with 44 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1955.

This is a survey concerned with the nature of the glia of the central nervous system. It is primarily a review of the pertinent literature. As such, it should prove useful as a point of departure for one unfamiliar with this literature. Very few personal observations of the author are presented. The treatment of this material is superficial. Commonly, the conclusions only of the various writers are given without any of the evidence on which those conclusions were based. Some sections, such as that on gliosis, are surprisingly brief. The glia of the neurohypophysis and pineal body are mentioned on page 1 and never referred to again. Although the author continually mentions both fibrous and protoplasmic astrocytes, he at no time discusses their morphological differences or provides the reader with any information as to how he may distinguish between them. The author frequently implies that a recent writer is responsible for some concept that is actually far older and attributable to entirely different investigators, e. g., pages 14 and 15, "scheme of glial histogenesis" attributed to Kershman (1938), and page 51, "chemical trans-synaptic transmission of nervous impulses" ascribed to Eccles (1953). The author almost constantly uses the noun, glia, for the adjective, glial ("glia fibres," "glia apparatus," "glia network," "glia preparation"). There are several amazing errors in proofreading, e. g., "Werniclce" for "Wernicke." The almost complete lack of photomicrographs is surprising; the few that are reproduced are poor. On the other hand, the drawings are simple and well reproduced, except for figure 12, which is at too low a magnification. There are over 11 closely printed pages of references. The press work is good, and the index is adequate.

The Story of Medicine. By Kenneth Walker, M.A., M.B., F.R.C.S. Cloth. $6. Pp. 343, with 51 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1955.

In the first part of this book, medical discoveries and medical discoverers are dealt with in chronological order. Medical pioneers are depicted as their fellow men saw them, against a background of their own times. In the second part, the rise of specialization and the division of medicine into a number of different fields of research are discussed without placing events in strict chronological order. Whereas medicine originally advanced in a haphazard way, no medical theory or discovery being accepted until it made its entry into the world at the right psychological moment, current medical progress has become more impersonal and is more and more the result of collateral advances both in the medical field and in allied scientific disciplines. Reading this book should provide a rewarding experience for the reader, be he a physician or a member of the laity, as the engrossing story of medicine is traced through the ancient civilizations, the medieval period, and the Renaissance down to the present era. Physicians and their art have always had a fascination for the world at large, and this book should further cement that feeling.

Surgical Physiology of the Adrenal Cortex. By James D. Hardy, M.S., M.D., F.A.C.S., Professor and Chairman, Department of Surgery and Director of Surgical Research, University of Mississippi, University, Miss. Publication number 266, American Lecture Series, monograph in Bannerstone Division of American Lectures in Surgery. Edited by Michael E. De Bakey, M.D., Professor of Surgery, Baylor University College of Medicine, Houston, Tex., and R. Glen Spurling, M.D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. Cloth. $5.75. Pp. 191, with 34 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, Canada 2B, 1955.

This book is concerned with function of the adrenal cortex in conditions of interest to surgeons. It is well written and displays evidence of a deep knowledge of the subject by the author. Following an introductory chapter, four sections of the book are concerned with decreased adrenocortical function due to stress evoked by surgical operations, burns, malnutrition, and cancer. Chapters on increased function of the adrenal then follow. These are concerned with cortical hyperplasia and adrenal tumors. The book closes with a section on the present status of corticotropin and cortisone in conditions that the surgeon may encounter. In a special chapter, the author evaluates the present status of bilateral adrenalectomy as a treatment of essential hypertension and metastatic cancer, and most surgeons will agree with his conclusions. In hypertension, adrenalectomy offers at best only a moderate hope of significant improvement in any given patient. In some patients with advanced mammary cancer, adrenalectomy will produce considerable improvement.

Talking with Patients. By Brian Bird, M.D., Associate Professor of Psychiatry, Western Reserve University, Cleveland. This material was published in *American Practitioner and Digest of Treatment* for May, 1955. Cloth. $3. Pp. 154. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; 2083 Guy St., Montreal, Canada; Sir Isaac Pitman & Sons, Ltd., 39 Parker St., Kingsway, London, W.C.2, England, 1955.

This book fills a needed place in the armamentarium of the practitioner of medicine. It is safe to say that, all too frequently, the practitioner devotes too little time to a discussion of the patient's problems with him and by him. If more attention were given to this phase of medicine, there would be fewer cult practitioners. The book is clearly and well written. It is divided into parts dealing with the problems of adults and those of children. It might well be described as a psychology primer. Unfortunately, most of the work has to do with history taking, and too little is devoted to advice and instruction after the diagnosis has been established. The book will be appreciated particularly by those who have made the mistake of using leading questions. In the comedy "Harvey," the young psychiatrist was attempting to find out how the cordial and genial alcoholic came to name the phantom Harvey. Very knowingly and very intently, he asked him what his father's name was. Obviously the answer he expected was Harvey. To the psychiatrist's great surprise and consternation, the answer was John. Avoidance of such a mistake is clearly outlined in this book. The problems dealt with are mainly psychological and sometimes psychiatric. The author, by his training and work, is particularly well fitted to discuss this pattern of treatment. This book should, and I believe will, be read by many practitioners. The general practitioner, internist, and surgeon should profit by it. It cannot be called a deep reference work but rather a handy desk type of reference book.

Clinical Biochemistry. By Abraham Cantarow, M.D., Professor of Biochemistry, Jefferson Medical College, Philadelphia, and Max Trumper, Ph.D., Basic Science Coordinator, Naval Medical School, National Naval Medical Center, Bethesda, Md. Fifth edition. Cloth. $9. Pp. 728, with 54 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London W.C.2, England, 1955.

The authors have rewritten their popular book because they think the gap between clinical medicine and "fundamental" biochemistry and physiology (which gap this book bridges) has narrowed sufficiently so that the practicing physician can read technical treatises. In short, they believe that the elementary treatment used in the earlier editions is no longer appropriate. These remarks do not mean that the text is difficult to read; the style is as lucid and smooth as ever. Every topic the reviewer can think of that relates to biochemical approaches to

diagnosis or management of clinical disorders is treated here. Recent theories on topics treated before are incorporated along with much new material on liver and kidney function; abnormalities in plasma protein; nucleic acids; metabolism of uric acid, prophyrin, iodine, and potassium; lipoproteins; fatty liver; acid-base balance; biochemical aspects of diet; and the diagnosis of disorders in the functioning of endocrine glands, especially of the thyroid and adrenal glands. The chapter on hormones and endocrine function was written with A. E. Rakoff, who also helped in the fourth edition. As in earlier editions, directions are not given for performing tests and assays, because such directions are available in laboratory manuals. To keep the book to a reasonable size, the authors have adopted smaller type and have relied on the clarity of the type face and the heavy leading to make the text clearly legible. Space also is saved by giving brief lists of selected readings instead of longer bibliographies and by omitting references in the text. Biochemical abnormalities in the disease states are no longer listed separately, because this information can be obtained through the index. The table of contents and indexes are extensive and seem to be accurate. Every physician who relies to any extent on the clinical laboratory for help in diagnosis and prognosis should have access to this book.

The Prevention of Disease in Everyday Practice. By Isadore Givner, B.S., M.D., F.A.C.S., Associate Clinical Professor of Ophthalmology, New York University Post-Graduate Medical School, Maurice Bruger, M.Sc., M.D., C.M., Associate Professor of Medicine, New York University Post-Graduate Medical School, New York, and contributors. Cloth. $20. Pp. 964, with 51 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1955.

This interesting approach to prevention of disease rests to a large extent on the imposing list of contributors and to the editorial guidance of the authors. The book is simply written, the chapters logically divided, and the descriptions adequate for this type of presentation. One will not find extensive or theoretical discussions but rather highlights of clinical features that are particularly pertinent to the subject under discussion. It should prove to be a useful and handy reference book for the practitioner, especially when he integrates it with other more exhaustive treatises on the special subjects that are embraced in this volume. Perhaps the potential usefulness of the book can be summed up by referring to it as a working handbook.

Handatlas der Cystoskopie und Urethrocystoskopie. Von Dr. med. O. Kneise, a.o. Professor für Urologie an der Martin-Luther-Universität Halle, und Dr. med. M. Stolze, dozent für Urologie, Martin-Luther-Universität Halle. Fourth edition. Cloth. 44 marks. Pp. 112, with 130 illustrations. VEB Georg Thieme, Hainstrasse 17-19 Aufg. C, Leipzig C 1, Germany, 1955.

This is a new edition of an atlas first published in 1907. The third edition was published only two years ago, and, apparently as a result of wide demand, the fourth edition has now been printed. Changes in the contents of this edition are few. The book consists largely of a series of aquarelles of lesions in the bladder as seen through the cystoscope. As in previous editions, this atlas has an advantage in the fact that the pictures were made by urologists who were also artists. The aquarelles offer life-like reproductions of the different pathological lesions described. The atlas should be of great help to the beginner in the use of the cystoscope.

Pelvo-Spondylitis Ossificans: Rheumatoid or Ankylosing Spondylitis. A Roentgenological and Clinical Guide to Its Early Diagnosis (Especially Anterior Spondylitis). By Ragnar Romanus and Sven Ydén. Translated by Joan Whitehouse. Cloth. $8.50. Pp. 163, with 55 illustrations. The Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11; Ejnar Munksgaards Forlag, Nørregade 6, Copenhagen K, Denmark, 1955.

In this monograph, the disease we commonly know as rheumatoid spondylitis, is described under a new name, pelvospondylitis ossificans. The authors' purpose in writing the book appears to be to trace the course of this entity from its inception to the final stages. It is based mainly on clinical and roentgenographic observations in a large series of patients with rheumatoid spondylitis. The authors discuss clinical signs and symptoms of the early sacro-iliac involvement, as well as the spinal lesions and the paravertebral calcification noted in pelvospondylitis ossificans. The first part consists of descriptive material, and the second is devoted to roentgenograms of the various phases of rheumatoid spondylitis. The book is printed on good paper in a large type that is easily read. The illustrations might have served the reader better had they been incorporated with the descriptive material rather than confined to a separate section. The bibliography is complete, although the references in the text at times interfere with the effectiveness of the writers' style. The book might have been of greater value, if there had been a chapter on the treatment of this disease. This monograph adds little to what has already been written on the clinical and roentgenographic findings of this subject. It has value, however, as a reference book.

Society and Medicine. Iago Galdston, M.D., editor. New York Academy of Medicine, lectures to laity, no. XVII. Cloth. $3. Pp. 131. International Universities Press, Inc., 227 W. 13th St., New York 11, 1955.

For the past 20 years, the New York Academy has been actively engaged in acquainting the general public with current advances in medical progress. The earliest lectures dealt with specific diseases, but in recent years they have touched on distinctive trends in medical and scientific thinking in order to orient and guide a better medically informed public. This small book comprises six lectures devoted to the theme that society and medicine are intricately interrelated. "They suggest ways in which we may effectively come to grips with the problems, change the methods and improve the processes both of medicine and of societal existence." The first essay deals with diseases and their local setting; the second is concerned with the thesis that ethics are rooted in biology; and the third demonstrates the roles of conflicts, deprivation, and frustration in neurotic behavior. The remaining essays discuss the extent to which environment can affect hereditary potentials, the medicosocial factors involved in the process of growing up, and the importance of man's nutritional environment. This book is both thoughtful and provocative and is recommended for mature readers.

Principles of Medical Statistics. By A. Bradford Hill, C.B.E., D.Sc., Ph.D., Professor of Medical Statistics in University of London (London School of Hygiene and Tropical Medicine), London. Sixth edition. Cloth. $4. Pp. 314, with 13 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1955.

In pleasing contrast to the obscurity, evasiveness, and affectation of many other books in the field, this one makes an uncompromising frontal attack on the subject, giving the necessary details accurately. The author has kept in mind the questions that most medical readers will want him to answer and is aware of the difficulties most likely to beset the student. He has supplied an excellent set of numerical problems; the answers are worked out fully on pages 271-287. The necessary tables are included, and there is a good index. An entirely new chapter on clinical trials and corresponding changes in the opening and closing chapters are a feature of this edition. It is recommended.

Practical Oral Surgery. By Henry B. Clark, Jr., M.D., D.D.S., Chairman, Division of Oral Surgery, School of Dentistry, University of Minnesota, Minneapolis. Cloth. $8.50. Pp. 392, with 223 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1955.

This small book, begun as a textbook for undergraduate dental students, is believed by its author to have "taken the form of a handbook of what the dentist in general practice should know about oral surgery." Both these purposes have been admirably accomplished by the use of a sequential approach to each problem and a profuse use of excellent illustrations that include line drawings, wash drawings, photographs, and roentgenograms. Captions of illustrations are concise, as is the text material, which is presented in an expanded outline form. The absence of the traditional chapter on local anesthesia may be a disadvantage to some possible purchasers. The chapters on hospital practice, drugs and pharmaceutical preparations, and the art of practice are entirely new to textbooks of oral surgery and appear to be ample justification for the book. The style is concise, the printing excellent, and the index complete. To those for whom it was intended, this should be a welcome first edition.

QUERIES AND MINOR NOTES

TETANUS IMMUNIZATION FOR FOOTBALL PLAYERS

To the Editor:—*Our high school football field is used also as a show ground for a junior fair; cattle, horses, and other livestock are stabled and paraded on it. Should players using this field be required to have tetanus immunization? If so, how frequently should booster shots be given?*

Charles H. Denzler, M.D., Sumner, Wash.

Answer.—If horses, cattle, and other farm animals are stabled, paraded, or grazed on an athletic field, contamination of the soil with tetanus and other clostridial spores is highly probable. The practice of using such an area for a football field is unwise. Players using this field should be required to have a series of three injections of tetanus toxoid for the production of basic immunity against tetanus. Although it is now established that the basic immunity persists for 12 or more years after immunization, it would seem wise to give each football player at the beginning of the season a booster shot. This would afford him an adequate level of tetanus antitoxin circulating in his blood during most or all of the football season. In the event of an injury, additional booster shots could be given.

RELEASE OF TOURNIQUETS

To the Editor:—*I still read in first-aid literature that the tourniquet should be released every 20 minutes. In my intern days I remember tourniquets being applied to the legs for well over an hour in orthopedic operations. What is the proper recommendation as to the length of time the tourniquet should be placed on a limb without ill-effect to that limb?*

Paul W. Hughes, M.D., Fort Lauderdale, Fla.

Answer.—While the time-honored first-aid recommendation that a tourniquet be released for a few seconds every 20 minutes is firmly entrenched in first-aid literature, undoubtedly it has no basis on actual experimental findings. It is merely an opinion that has become incorporated firmly in a certain type of literature. The writer has been interested in this subject, and it is his opinion that the time intervals recommended by surgeons queried on this matter tend to be conservative and that in their own actual experience they have left tourniquets on much longer than the recommended time without any damage. Most of them will admit this on persistent questioning. The writer has many times left a tourniquet on an extremity for 90 minutes and occasionally up to two hours, without apparent harm. Even though most of the time limits recommended for tourniquet use are based on clinical experience, certain theoretical considerations have a bearing on the matter, particularly those concerned with the character of the tourniquet in its relation to local tissue damage from pressure and the temperature conditions under which the tourniquet is used. This last is probably the most important single factor affecting the length of time that a tourniquet can be left on without risk of permanent injury. If a tourniquet constricts an extremely narrow band of tissue it may do harm through direct trauma to the local tissues and particularly to the blood vessels. This possibility is enhanced greatly if atheromatous plaques are present in a patient with advanced arteriosclerosis. The actual pressure exerted by a rubber tube type or Esmarch bandage type of tourniquet may be great if used by inexperienced individuals. The various pneumatic tourniquets, using a pressure gauge of some type, usually cover a much wider band of tissue, do not exert excessive pressures, and are therefore much safer. Temperature level has a marked effect on the survival of tissues. It is probable that a tourniquet, applied to an extremity in an air-conditioned room where the extremity is permitted to cool several degrees after the application, could be left on for a much longer time. Experiences with refrigeration anesthesia suggest the probability that if an extremity is properly cooled a tourniquet may be left on for several hours without irreversible tissue damage. Probably there is a direct proportion between the temperature maintained in the extremity (down to freezing) and the length of time the tourniquet may be safely left in place. Since tourniquets may be applied in emergency by relatively inexperienced individuals, under conditions of extreme high temperature on certain occasions, and since a very temporary release of a tourniquet can do no particular harm, it would seem that the 20 minute limitation recommended in first-aid literature is probably a safe rule for over-all general use, under first-aid conditions.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

BRADYCARDIA DURING ANESTHESIA

To the Editor:—*A 58-year-old man with a preoperative blood pressure of 122/70 mm. Hg and a pulse rate of 64 underwent cholecystectomy and appendectomy under endotracheal cyclopropane-anectine drip anesthesia. Early in the operation, following exploration of the abdomen and traction on the liver and on the gallbladder, there was a period of bradycardia (pulse rate 36 to 40) and hypotension (systolic blood pressure 60 to 70 mm. Hg). After changes in level of anesthesia, changes in anesthetic agent, and increased ventilation proved ineffective, a pulse rate of 60 and a blood pressure of 110/70 mm. Hg were restored after intravenous administration of 1/200 grain (0.3 mg.) of atropine. Total period of bradycardia and hypotension was about 10 minutes. 1. Does this patient have an increased risk of postoperative coronary thrombosis or cerebrovascular accident? 2. Would nasal administration of oxygen for 24 hours postoperatively have prophylactic value against coronary thrombosis and/or cerebrovascular accident? 3. What other management would be suggested?*

Aviva S. Hoyer, M.D., Los Angeles.

Answer.—1. There is no reason to believe that fainting, which causes profound bradycardia and hypotension, or a similar vagal episode during anesthesia and laparotomy, will predispose to coronary thrombosis or cerebrovascular accident either during or after the episode. 2. The administration of oxygen after a fainting episode is not necessary and probably would be ineffective as prophylaxis for impending cerebral or cardiac accidents due to any cause. 3. No medicament other than atropine seems necessary in a case of this sort.

DIAGNOSIS OF CELIAC DISEASE

To the Editor:—*Please outline the differential diagnosis of celiac disease, including the essential points in laboratory diagnosis and the newer concepts in the etiology, treatment, and management.*

M.D., Canada.

Answer.—Idiopathic celiac disease is a chronic nutritional disorder of children characterized by abdominal distention and associated with diarrhea with large, pale, greasy, foul-smelling stools. Idiopathic celiac disease, in which causal factors are not clearly defined, must be differentiated from cystic fibrosis of the pancreas and obstructive, short-circuiting, and chronic inflammatory lesions of the intestine, among which may be malrotation of the intestine, gastrocolic fistula, regional ileitis, chronic giardiasis, and abdominal tuberculosis. Idiopathic celiac disease is essentially a disorder of intestinal assimilation, in contrast to cystic fibrosis of the pancreas in which the difficulty concerns enzymatic digestion of foods rather than assimilation. The explanation of the assimilatory defect is still obscure. Two

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factors seem to be present, a constitutional peculiarity that renders these patients peculiarly susceptible to a trigger mechanism, which is usually a parenteral infection or in some cases psychic trauma. In making the differential diagnosis roentgen examinations of the gastrointestinal tract excludes various conditions associated with partial or intermittent obstruction. Chronic enteric infections are ruled out by bacteriological studies. The chief problem is differentiating from cystic fibrosis of the pancreas. In idiopathic celiac disease the onset is rarely under six months, and there is a tendency to spontaneous recovery. Furthermore the duodenal enzymes are normal, while in pancreatic disease they are all very low. The serum proteins are usually reduced, while in pancreatic disease they are usually normal. Digestion of gelatin film by stool is usually positive, and the glucose tolerance test is flat, while in pancreatic disease the former is negative and the latter often normal. The amino acid absorption is normal in celiac disease, while in pancreatic disease the curve is flat. Absorption of vitamin A given in alcohol is impaired in celiac disease, while it is normal in cystic fibrosis of the pancreas. Probably the simplest and most reliable tests are the duodenal enzyme determinations, glucose tolerance test, and vitamin A absorption. X-ray examinations are also of great help. In idiopathic celiac disease there is a persistence of the infantile clumping pattern, while in pancreatic disease this is usually absent. The demonstration of latent infection or parasitic infestation is not infrequently found in celiac disease. Treatment consists mainly of maintaining the patient's nutrition. Dietary measures vary, and it is generally agreed the diet should be high in protein. Most clinicians favor the restriction of fat. The tendency in recent years has been to feed the simple sugars and to avoid polysaccharides of high molecular weight. Vitamins should supplement the diet. Anemia, when present, should be treated with iron. Drugs play little part in therapy except in eradicating infection.

DETERMINING THYROID STATUS

To the Editor:—*In a patient who is taking 1 or 2 grains (6 or 13 mg.) of thyroid per day, is there any way of determining the true thyroid status, other than stopping the medication and waiting three months and then doing radioiodine uptake, protein-bound iodine, and/or basal metabolism tests?*

Ephraim M. Katz, M.D., Bronx, N. Y.

Answer.—A simple method has been described by (Jeffries, W. K., and others: Value of Single Injection of Thyrotropin in Diagnosis of Obscure Hypothyroidism, *New England J. Med.* **249:**876-884 [Nov. 26] 1953), utilizing the stimulating effect of thyroid-stimulating hormone in the thyroid gland. On the first day a tracer dose of radioactive iodine (I^{131}) is administered and the thyroid uptake determined after three hours. On the next day the residual I^{131} in the thyroid gland is estimated, a second tracer dose is administered orally along with 10 mg. of thyroid-stimulating hormone administered intramuscularly and a second three-hour uptake is determined. The ingestion of thyroid does not prevent a response to the injection of thyroid-stimulating hormone. If a primary hypothyroidism exists there will be no response to thyroid-stimulating hormone. If the hypothyroidism is secondary to pituitary deficiency there will be a sharp increase in the uptake on the second day. If the patient is euthyroid and receiving thyroid medication, there will be an increase in uptake similar to that of a euthyroid individual without medication. If the patient is hyperthyroid and is receiving desiccated thyroid little suppression of thyroid uptake will be found with the control test. In euthyroid individuals thyroid medication of 1 grain (6 mg.) or more suppresses uptake. (Greer, M. A., and Smith, G. E.: Method for Increasing Accuracy of Radioiodine Uptake as Test for Thyroid Function by Use of Desiccated Thyroid, *J. Clin. Endocrinol.* **14:**1374-1384 [Nov.] 1954). An elevation of protein-bound iodine following thyroid-stimulating hormone can be used in a similar manner as I^{131} uptake. The technique of the thyroid-stimulating hormone test has not been standardized. Some make use of a six hour uptake, others use a 24 hour uptake, and others use several injections daily for one or more days (Schneeberg, N. G., and others: Diagnosis of Equivocal Hypothyroidism Using Thyrotropic Hormone (TSH), *J. Clin. Endocrinol.* **14:**223-231 [Feb.] 1954), determine the 24 hour thyroid uptake and approximately two weeks later repeat this procedure following three daily consecutive intramuscular injections of 20 to 30 mg. of thyroid-stimulating hormone. This method gives greater percentage increases in thyroid uptake and is perhaps more accurate but is more troublesome. Thyroid-stimulating hormone is obtained from Armour Laboratories under the name of Thytropar in 10 U.S.P. units per ampul. Four units is equal to 2.5 mg. of thyroid-stimulating hormone, as reported in the literature.

DYSMENORRHEA

To the Editor:—*Please outline the therapy for an adolescent with dysmenorrhea. Need any differential diagnosis be entertained in a girl who is menstruating and suffers severe lower abdominal pain at the same time?* *M.D., Massachusetts.*

Answer.—Differential diagnosis is definitely indicated. This consultant proceeds with the following treatment: (1) careful physical examination and pelvic examination and careful examination of the posterior fornix to detect migrating, developing endometrial cysts; (2) diagnostic dilation, curettage, and transtubal insufflation by the method of Rubin to determine if there is tubal obstruction that is confined to the lumen and is making it impossible to diagnose by bimanual examination; and (3) if there is definite retroversion or retrocession with descensus, a Smith-Hodge pessary inserted and worn by the patient several months to determine if the position of the uterus causes the pain. If a definite diagnosis of primary, or essential, dysmenorrhea has now been established, the following is the therapeutic procedure. A detailed outline of the problem of menstruation is discussed with the patient. The fact that the condition is more severe in the nervous type with a low threshold of pain is emphasized. The need of exercise for building of the body is also emphasized, as many of these people are of sedentary habits. Emphasize the fact that there is no real change in the organism and no definite proof that there is an alteration in estrogen or progestogens as causative factors. In regard to medication and treatment, the following are given: (1) encouragement; (2) aspirin, Bufferin, or Anacin; (3) bed rest not encouraged; (4) hot water bag—some patients prefer cold water bags; (5) mild sedation (Acetanilid is supposed to be quite efficient. Morphine derivatives and alcohol should be absolutely prohibited); (6) substances containing benzedrine may be helpful; (7) estrogenic substances may be of value by stopping ovulation as shown by Kurzrock (it is known that pain does not occur with an ovulatory cycle); and (8) finally dilation and curettage may be done and repeated if necessary. If all of these are of no avail one must consider an operation that includes a good suspension of the uterus with plication of the uterosacral ligaments and painstaking sacral neurectomy; the latter at times is quite efficient. Severe dysmenorrhea is infrequent. If pain persists throughout the period and is of a dull heavy nature it is most likely secondary; the primary type is spasmodic; labor-like pains prior to the onset of the flow, and when the flow is established the pain is relieved.

HYPOTHETICAL VENEREAL DISEASE QUESTION

To the Editor:—*As a hypothetical question let us assume that a naval ship puts into ports where the sailors all go on leave after a long time at sea. Would a substantial injection of penicillin protect these men against venereal disease?*

M.D., Nebraska.

Answer.—In theory, it would be possible to protect a ship's company about to go on shore leave for four or five days against the acquisition of syphilis and gonorrhea (but not of lymphogranuloma venereum or granuloma inguinale) by the intramuscular injection of 600,000 units of a repository penicillin preparation given at the time the sailor leaves the ship. Such protection would probably last only for the specified period of four to five days and no longer. In practice, however, this is both a visionary and an intolerable suggestion. It would involve the administration of penicillin to a great many men who do not propose to expose themselves to venereal disease, and who would, therefore, rightfully object to the procedure. It would involve, moreover, the medicolegal issue of the invasion of the

sanctity of the person by means of a surgical instrument (a needle) carried out without the patient's consent. Such a procedure would, moreover, be indefensible on moral grounds and would be opposed, not only by the Chaplain's Corps but also by medical and command officers. On the other hand, penicillin administered orally after exposure in a dose of 250,000 units is highly effective in the prophylaxis of gonorrhea, provided the penicillin is taken within one hour of the suspected exposure. There is some degree of protection for as long as 12 hours after exposure. The use of orally given penicillin for the prophylaxis of syphilis is probably ineffective, since repeated doses over a period of several days and to a total of several million units would be necessary.

CATARACT

To the Editor:—*In a case of posterior cupuliform cataract (posterior subcapsular or saucer type) if one would do a planned extracapsular extraction, and remove all of the anterior capsule at the time of surgery, would the patient need a capsulotomy later? In other words, does the posterior cupuliform opacity affect the posterior capsule of the lens, making it opaque and necessitating a secondary operation (capsulotomy) or is the opacity truly subcapsular as the name implies?*

M.D., Pennsylvania.

Answer.—The cupuliform cataract involves posterior cortical region, and the posterior capsule is not included. However, since other portions of the lens frequently participate in opacification with cupuliform cataract involvement of the posterior capsule would not be unusual. This type of lens responds nicely to extracapsular extraction and there is surprisingly little cortex. However, there can be no assurance that a subsequent needling will not be required.

SULFONAMIDES AND SODIUM BICARBONATE

To the Editor:—*In* The Journal, *Feb. 26, 1955, in Queries and Minor Notes, page 780, a question on the use of sodium bicarbonate with sulfonamides for systemic administration was answered, and no mention was made of the widely used sulfonamide mixtures such as the sulfapyrimidines (sulfadiazine, sulfamerazine, and sulfamethazine). The answer inferred that only with sulfanilamide and sulfisoxazole is one reasonably sure of freedom from crystalluria without concomitant administration of alkali. The danger of crystallization depends on the amount of sulfonamide administered, in addition to solubility. When combinations of sulfonamides are used, the likelihood of crystallization depends not on the total dosage but on the amount of each single component in the mixture. The evidence for diminished crystalluria with the use of sulfonamide mixtures has been well documented. Lehr* (Proc. Soc. Exper. Biol. & Med. **58:***11, 1945; ibid.* **64:***393, 1947;* J. A. M. A. **139:***398, 1949;* Brit. M. J. **2:***601, 1950) has published experimental and clinical experiences in several reports in the English literature since 1945 and has shown that administration of combined sulfonamides without adjuvant alkalinization has given rise to low incidence of crystalluria. Frisk, Hagerman, and co-workers* (Nord. med. **29:***639, 1946) reported similar results in the Scandinavian literature. Flippin and Reinhold* (Ann. Int. Med. **25:***433, 1946) using mixtures of sulfadiazine and sulfamerazine without adjuvant alkali reported considerably less crystalluria than when single sulfonamides were administered.*

No case of renal obstruction due to these triple sulfonamides has been documented in the literature, despite the fact that multiple sulfonamides have been widely prescribed for years in the United States. It may be that the relatively obsolete sulfonamides, such as sulfanilamide and sulfapyridine, were included in the discussion and sulfonamide mixtures were ignored because the inquiry originated in India, where triple sulfonamides are not widely available. However, the above is submitted to set the record straight for the American and Canadian reader.

Richard A. Carey, M.D.
American Cyanamid Company
30 Rockefeller Plaza
New York 20.

SNAKE BITE

To the Editor:—*In* The Journal *for July 30, 1955, page 1235, an inquirer is given a description of Dr. Stahnke's excellent "L-C" treatment for snake bite. Dr. Stahnke's publication of this technique for patients gives credit to my animal experiments that established the principle. Presumably ethyl chloride is recommended because it might be carried on trips, where ice could not be carried. If ice is obtainable, even before a bucket is found, Dr. Stahnke would probably agree that direct application of ice to the area is best. Incisions may be added in dangerous cases. Besides my experimental publications, I have urged this treatment for snake, spider, scorpion, wasp, or other poisoned wounds (even mosquito bites) in two letters* (J. A. M. A. **139:***616 [Feb. 26] 1949; ibid.* **151:***1156 [March 28] 1953). Two other answers to inquiries* (J. A. M. A. **150:***1549 [Dec. 13] 1952; ibid.* **153:***178 [Sept. 12] 1953) prescribed treatments, omitting refrigeration. This was particularly unfortunate in the recommendation for coral snake bite, which on theoretical grounds should respond excellently to cold, though it is otherwise painful and dangerous.*

Annual deaths from snake bite are estimated at 25,000 to 35,000 for Asia, 3,000 for South America, 300 to 500 for North America including Mexico, smaller numbers for Europe, and large unknown numbers for Africa. Ninety-five per cent of the bites are on limbs. It should be made known that not a single death from these bites is necessary. Assuming that a bite is judged to be fatal, for example, that somebody in a wilderness remote from any therapeutic aid is bitten by the largest bushmaster or king cobra, my experiments showed that it is always possible to save life at the cost of a limb by promptly applying a tight permanent tourniquet. Amputation can then be deferred for a day or two if necessary. Such a tourniquet is very painful for several hours, but so is the snake bite. A tight tourniquet should never be applied without refrigeration unless the limb is to be sacrificed. With refrigeration, Dr. Stahnke wisely limits the tourniquet to five minutes, then the refrigeration alone is continued for a selected number of hours.

Frederick M. Allen, M.D.
1031 Fifth Ave.
New York 28.

To the Editor:—*Having seen the answer to a question on snake bite in* The Journal, *July 30, 1955, page 1235, I am prompted to offer a few comments. The L-C method proposed by Herbert L. Stahnke, Ph.D., professor of zoology and director of the poisonous animals research laboratory, Arizona State College, was ably discussed by Dr. Frederick Shannon at the first International Conference on Venoms, in Berkeley, Calif., in December, 1954. His paper, with the others read at the conference, is now in press, to be published in a symposium volume under the title "Venoms." His findings were in agreement with the brief description given in the answer.*

Although it is true, as stated by your consultant, that "tourniquet, multiple incision, and suction technique following the head of swelling is still the local treatment of choice" in Crotalus envenomization, he neglected to mention the importance of neutralizing the venom received in the bite with specific serum. Especially in severe envenomization by crotaline species, when it is impossible to remove sufficient venom by purely mechanical measures, is it imperative to administer an adequate dose of antivenin at the earliest moment. As pointed out by other contributors to the conference, the venoms of crotalids break down the blood vessels; thus permeation of the body by the serum may be impeded if specific treatment is delayed. Incisions on a digit are laways contraindicated, since, as emphasized by Dr. Shannon, the trauma of a knife blade increases tissue damage and may be responsible for ultimate gangrene, necessitating amputation.

Mahlon Z. Bierly Jr., M.D.
Wyeth Laboratories
1401 Walnut St.
Philadelphia 2.